



The genus *Hydroptila* Dalman (Trichoptera, Hydroptilidae) in Japan

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Abstract

The Japanese species of *Hydroptila* Dalman (Trichoptera, Hydroptilidae) are reviewed, confirming 10 described species, and introducing 2 new species. For clear comparisons and to include new details, males and females of all species, including the 2 new species, *H. ogasawaraensis* Ito and *H. nanseiensis* Ito, are redescribed or described anew. *Hydroptila itoi* Kobayashi is synonymized with *H. dampfi* Ulmer and *H. thuna* Oláh and *H. botosaneanui* Kumanski are recorded for the Japanese fauna for the first time. *Hydroptila usuguronis* Matsumura is reassigned to the genus *Psychomyia* Latreille (Psychomyiidae).

Key words: new species, new synonyms, reassignment

Introduction

Hydroptila Dalman, 1819, is a large cosmopolitan genus of Trichoptera (Marshall 1979). For Japan, 9 named species were recorded (Ito 2010). However, several taxonomic problems remained: (1) Unidentified adults have been collected (Tanida *et al.* 1999, Satake & Kuranishi 2007); (2) the taxonomic status of *Hydroptila usuguronis* Matsumura, 1931, is unclear due to the lack of information on the genitalia; and (3) the true identity of some species may have been overlooked as they were described without adequate reference to published names.

As a consequence of this study on a large number of recently collected specimens of *Hydroptila*, 12 species are now recognized in the Japanese fauna. Males and females of all named species are redescribed to enable clear, unambiguous comparisons, and 2 new species are described. One name is newly synonymized and the true nature of *Hydroptila usuguronis* is resolved.

Material and methods

Association of the male and female of each species was established by rearing larvae to adults. When rearing larvae was impossible, the association was based on similar general body characteristics from among specimens collected together. Male and female genitalia were figured after treatment in dilute KOH. Morphological terms mainly follow Wells (1979) and Marshall (1979). The type series of the new species are deposited in the collections of the Natural History Museum and Institute, Chiba (CBM–ZI). Other specimens are deposited in the collection of the first author unless otherwise indicated in parentheses. All specimens are preserved in 70–80% ethyl alcohol. The depositories of the specimens, collecting methods and collectors are abbreviated as follows: Lake Biwa Museum (LBM), Minakuchi Kodomo-no-kuni Nature Museum (MKNM), light trap (L), Malaise trap (M), light pan trap (P), reared from pupae or larvae (R), sweep net (S), Ayuko Ohkawa (AO), Hiroyuki Nishimoto (HN), Kazumi Tanida (KT), Mikio Takai (MT), Naoki Kawase (NKA), Naotoshi Kuhara (NK), Ryoichi B. Kuranishi (RBK), Toshio Hattori (TH), Tomiko Ito (TI), Takao Nozaki (TN).

Species descriptions

Hydroptila phenianica Botosaneanu, 1970

(Figs. 1, 14A)

Hydroptila phenianica Botosaneanu, 1970, 290–291, pl. 12, male, female, Korea; Arefina *et al.*, 2002, 99, Russian Far East (continental parts).

Hydroptila matsuii Kobayashi, 1974, 67–68, pl. 25, male, Japan (Honshu); Ito, 2005, 441, 446, figs. 7–8, male; synonymized by Nozaki & Tanida (2007).

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker markings at about half length and at apices.

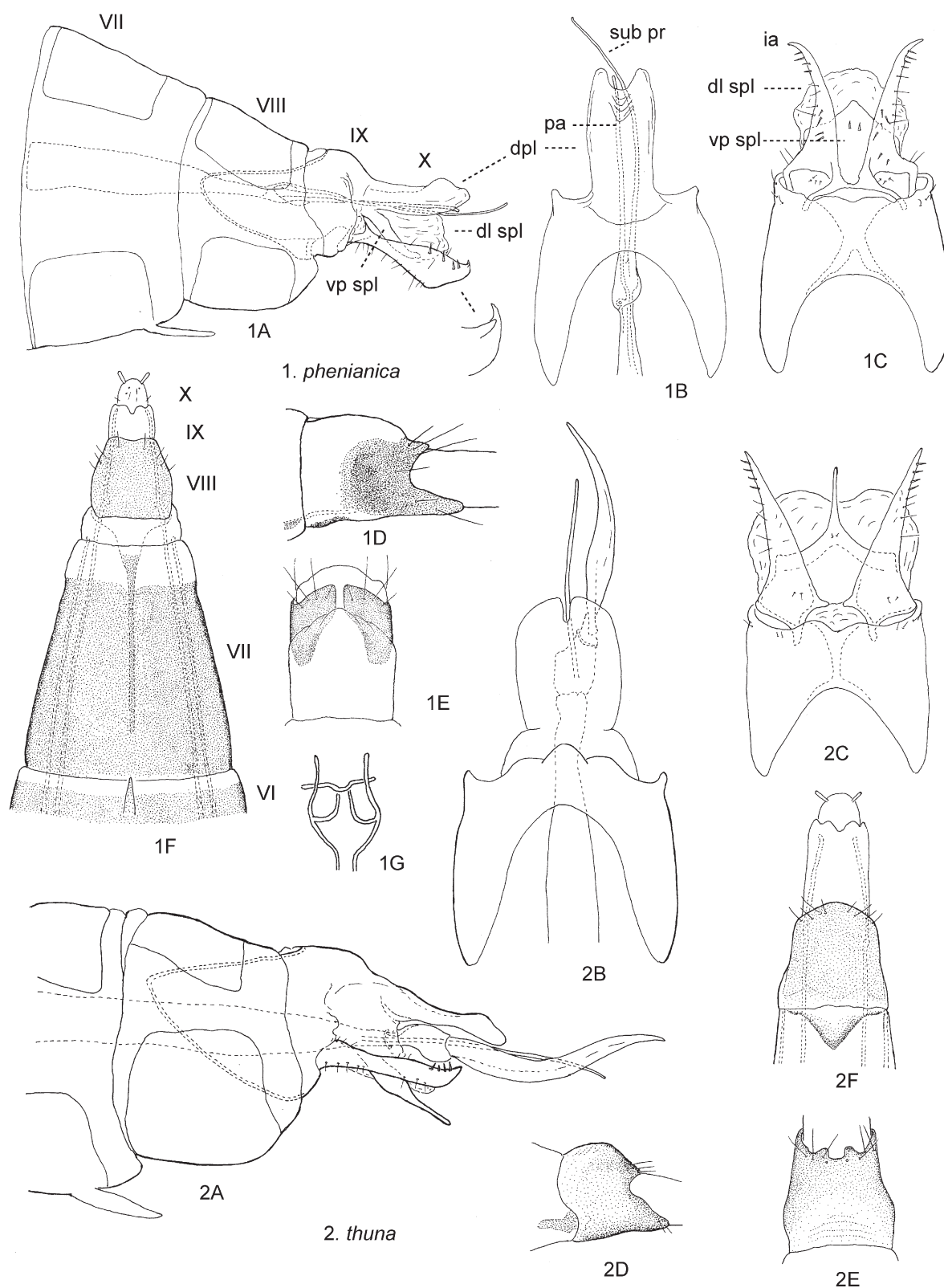
Male. Lengths of forewing, hindwing and body 2.2–3.1 mm, 1.9–2.7 mm and 2.2–3.2 mm, respectively (n=5). Antennae 29–30-segmented; length 0.9–1.5 mm (n=5). Ventral process of sternite VII small, apex subacute. Segment IX with large subtriangular apico-lateral apodemes and slightly convex dorsal and ventral margins. Dorsal plate semi-membranous, elongate rectangular, apical margin deeply concave in dorsal view. Subgenital plate shorter than dorsal plate, composed of sclerotized ventral plate and membranous dorsal lobe; in ventral view ventral plate triangular, dorsal lobe rounded; 2 very short setae present on ventral plate. Phallic apparatus elongate with slender, long subapical process (not subapical position but likely homologous with subapical process in Wells (1979)), without titillator. Inferior appendages narrow at base, in lateral view gradually expanded at about 1/5–3/5 length then tapered to acute apex; in ventral view narrowly triangular, with acute apices directed dorso-laterad.

Female. Lengths of forewing, hindwing and body 2.6–3.0 mm, 2.0–2.6 mm and 2.7–3.3 mm, respectively (n=5). Antennae 23–25-segmented and 0.9–1.0 mm long (n=5). Abdomen increasingly darker and more setose from segment I to segment VII. Sternite VI bearing small acute ventral process. Segment VIII: Dorsally distinctly shorter than ventrally in lateral view; tergite and sternite heavily sclerotized and fused laterally; tergite consisted of 2 subquadrate sclerites, each sclerite with large excision at antero-mesal angle and 4 long setae near distal margin; sternite subquadrate, almost straight anteriorly, slightly convex laterally, posteriorly slightly concave mesally, with 4 pairs of setae; in ventral view internal sclerite extended from anterior margin of segment VIII to basal 3/4 of segment VII, semi-membranous triangular at base, sclerotized rod-shaped at distal 3/4. Bursa copulatrix thin, lozenge-shaped.

Specimens examined. **Hokkaido:** 1 female, Wakkanai-shi, Koitai, Masuhoro-gawa, 9.VIII.1999, TI & AO, L; 7 males, 27 females, Sarufutsu-mura, Nigori-kawa, Wakakusa-bashi, 1.VIII.2007, TI, P; 1 female, Sarufutsu-mura, Nigosen-gawa, Shobu-bashi, 31.VII.2007, TI, P; 1 female, Eniwa-shi, Moizari-gawa, Saiwai-bashi, 7.VIII.2010, TI, L; 1 female, Chitose-shi, Bibi-gawa, Chitose-ko, 20.VIII.2007, TI, L; 1 female, Chitose-shi, Bibi-gawa, Bibi-bashi, 6.IX.2007, TI, L; 1 male, 2 females, Tomakomai-shi, Uenae, Bibi-gawa, 4 m above sea level, 8–16.VII.2010, TI, L; 1 male, Assabu-cho, Uzura-gawa, Kogetsu-bashi, 3.VIII.2006, TI, L. **Honshu.** **Aomori:** 1 female, Tsugaru-shi, Hirataki-mura, 9–21.IX.2006, T. Yoshida, M; 3 females, Higashi-dori-mura, Noushi-gawa, 19 m, 14.IX.2010, TI, L. **Iwate:** 3 females, Oshu-shi, Koromogawa-mura, Omori, 200 m, 21.VI.1997, TH, L. **Akita:** 1 male, Daisen-shi, Nakasen-machi, 10.VI.1998, HN; 1 female, Gojome-machi, Jabami, 12.IX.2003, TH, L. **Yamagata:** 1 male, Kaneyama-machi, Kanayama-gawa, Kanayama-bashi, 11.X.1999, AO, S; 3 males, 4 females, Kaneyama-machi, Kanayama-gawa, Arakane-bashi, 11.X.1999, AO, S. **Ibaraki:** 13 males, 6 females, Joso-shi, Ishige-machi, Kinu-gawa, 16.VII.1997, K. Tojo; 5 larvae, Ishioka-shi, Yasato, Shobu-sawa, St. B, 24.XI.1997, NKA; 109 males, 215 females, Ishioka-shi, Yasato, Shobu-sawa, St. A, 21–24.V.1998, NKA; 7 males, 50 females, Yasato, Shobu-sawa, St. B, 4–11.VII.1998, NKA. **Tochigi:** 8 females, Kitsuregawa-cho, Aka-gawa, 24.IX.2002, TI, L. **Tokyo:** 2 females, Fussa-shi, Tama-gawa, Nagata-bashi, 23.VII.1993, TN, L; 1 male, Shibuya, Honmachi, 4.X.1999, NKA, L (MKNM). **Kanagawa:** 1 male, Odawara-shi, Kotobuki-cho, Sannou-gawa, 24.VIII.2000, TN. **Niigata:** 1 male, 1 female, Itoigawa-shi, Omachi, Mushi-gawa, 160 m, 15.IX.2003, TH, L; 4 females, Nagaoka-shi, Sakon, Shinano-gawa, 9.X.2001, T. Fujitani; 3 males, 12 females, Nagaoka-shi, Oyazawa, 9.VIII.2000, NKA, L (MKNM). **Ishikawa:** 6 males, 16 females, Kanazawa-shi, 4.VIII.1998, T. Murakami; 1 female, Wajima-shi, Mitsui-cho, Sakata, 16.VIII.1998, M. Maruyama. **Nagano:** 1 male, Azumino-shi, Toyoshina, Oguchi-zawa, 17.VII.1999, K. Sugisima; 8 females, *ibid.*, 6.VIII.2000, K. Sugisima; 11 females, Hakuba-mura, Oyomi-shitsugen, 16.IX.2003, TH, L. **Gifu:** 213 males, 34 females, Kagamihara-shi, Kawashima-kasada-machi, , Aqua Restoration Research Center, 9.V–4.VI.1999, T. Shimizu, L, S & M. **Shizuoka:** 1 male, 1 female, Shizuoka-shi, Ashikubo,

Yosooka-gawa, 130 m, 16.VIII.1997, TH, L; 1 male, Shizuoka-shi, Ashikubo, Matsuzaki-bashi, 75 m, 19.XI.2005, TH, L; 2 males, Shizuoka-shi, Kujiraga-ike, 22.X.1995, TH, L; 1 female, Shizuoka-shi, Kayama, 150 m, 28.V.2003, TH, L; 3 males, 12 females, Shizuoka-shi, Mizumiuro, 150 m, 27.IX.1995, TH, L; 9 males, 6 females, Shizuoka-shi, Ushizuma, Moriyama-sawa, 120 m, 25.V–27.VIII.1995, TH, L; 1 female, Shizuoka-shi, Yunoshima, Warashina-gawa, 280 m, 19.VIII.1995, TH, L; 13 males, 6 females, Shizuoka-shi, Yuyama, Yuyama-gawa, 180 m, 22.X.1995, TH, L; 27 males, 6 females, Shizuoka-shi, Yoshizu, 50 m, 21.V–28.VII.2001, TH, L; 43 males, 112 females, Shizuoka-shi, Endoshinden, Abe-kawa, 70 m, 25.VIII.1995, TH, L; 1 male, 31 females, Shizuoka-shi, Tawarazawa, Abe-kawa, 130 m, 22.X.1995, TH, L; 1 male, Shizuoka-shi, Tawarazawa, Abe-kawa, 135 m, 9.VI.2005, TH, L; 3 females, Shizuoka-shi, Tawarazawa, Abe-kawa, 150 m, 23.V.1994, TH, L; 8 males, 44 females, Shizuoka-shi, Yujima, Abe-kawa, 150 m, 19.VIII.1995, TH, L; 1 female, Shizuoka-shi, Nyujima, Abe-kawa, 375 m, 25.IX.1995, TH, L; 17 males, 7 females, Shizuoka-shi, Minami-abe, Suruga-ohashi, 25.VI–19.XI.2005, TH, L; 4 females, Fujieda-shi, Terashima, Seto-gawa, 60 m, 13.XI.2005, TH, L; 3 females, Shimizu-cho, Kakida-gawa, 27.V.2001, TN & KT, L; 1 male, 11 females, Mori-machi, Oguni-jinja, 5.VII–1.VIII.2000, K. Sugisima; 1 male, 3 females, Hamamatsu-shi, Inasa-cho, Tazawa, 31.VII.2000, K. Sugisima. **Aichi**: 4 males, Toyota-shi, Hayashizore, 1.V.1998, HN; 5 males, 7 females, Toyota-shi, Nomiyama-cho, Kashio-gawa, 26.IX.1999, Tanaka; 23 males, 8 females, Toyota-shi, Fuso-cho, Yahagi-gawa, 23.V.2000, HN; 5 females, Toyota-shi, Kuju-daira-cho, Tomoe-gawa, 30.V.2000, HN & H. Morita; 2 females, Shinshiro-shi, Aigo, Shimada-gawa, 5.IX.1998, HN; 1 female, Seto-shi, Kaisho-no-mori, Taisho-ike, 18.VIII.1996, HN; 2 males, Togo-cho, Morowa, 24.IV.1998, HN; 1 female, Asahi-cho, Oda, 9–10.VII.1999, K. Sugisima. **Mie**: 11 males, 10 females, Kameyama-shi, Seki-cho, Washiyama, 29–30.IX.2006, NKA, L (MKNM). **Shiga**: 1 female, Takahama-shi, Imazuhama, 2.VII.1986, N. Kobayashi (LBM); 1 female, Higashi-omi-shi, Eigenji-cho, Kanzai-gawa, 400 m, 5.IX.1998, TH, L; 5 males, 4 females, Higashi-omi-shi, Fuse, Fuse-tameike, 14–15.IX.2008, NKA, L (MKNM); 2 males, 4 females, Kusatsu-shi, Biwa-ko, 10.VII.1999, HN; 6 males, Koka-shi, Minakuchi, Nasaka, Imaike, Daichiji, 4.VII.2009, NKA, L (MKNM); 4 females, Koka-shi, Tsuchiyama, Minami-tsuchiyama, 15.IX.2008, NKA, L (MKNM). **Kyoto**: 1 male, Kyoto-shi, Waki-cho, Kizu-gawa, 2.IX.1997, K.Tojo; 11 males, 14 females, Kasagi-cho, Kizu-gawa, 2.IX.1997, K.Tojo. **Hyogo**: 3 females, Kamigori-cho, Takayama, Amuro-gawa, 27–28.VII.2000, T. Murakami; 2 males, Kawanishi-shi, Ina-gawa, 26.VII.2001, T. Murakami; 1 female, Yamasaki-cho, Ibo-gawa, 8.VIII.2001, AO; 3 females, Yabu-shi, Oya-akenobu, Akenobu-gawa, 400 m, 23.IX.2003, TH, L; 10 females, Asago-shi, Wadayama, Ishibe-jinja, 3.XI.2006, K. Inazu & TI, L. **Tottori**: 1 female, Nichinan-cho, Yukawa, Wakamatsu-gawa 580 m, 14.IX.2002, TH, L. **Shimane**: 8 females, Ota-shi, Sanbe, Ukinuno-no-ike, 5.VIII.2001, AO, L; 2 males, 31 females, Tsuwano-cho, Deiri, 8.X.2001, HN. **Okayama**: 6 females, Tsuyama-shi, Kagamino-cho, Terawada, Kagami-gawa, 7.VIII.2001, HN & AO. **Yamaguchi**: 1 female, Mine-shi, Kama, Koto-gawa, 7.X.2001, HN. **Shikoku**. **Tokushima**: 5 females, Anan-shi, Naka-gawa, 11–13.X.1998, S. Tsukaguchi. **Ehime**: 1 female, Uchiko-machi, Oda, Miyamoto, 2.VII.1999, E. Yamamoto, L; 1 female, Ozu-shi, Hijikawa, Shimasaka-damu, 7–9.VIII.2000, S. Tsukaguchi. **Kochi**: 3 females, Kami-shi, Tosa-yamada-cho, Sano, 5.X.2000, HN. **Kyushu**. **Fukuoka**: 8 males, 2 females, 16 prepupae, 1 larva, Ukiha-shi, Yoshii-machi, Nakamachi, Kose-gawa, 8.IV.1997, TN & AO; 7 males, 16 females, Fukuoka-shi, Sawara, Muromi-gawa, 19.IX.2000, AO, L; 9 males, 78 females, 4 pupae, 1 prepupae, Usui-machi, Kodai, Kodai-bashi, 20.IX.2000, AO, L; 1 prepupa, 11 larvae, Kaho-machi, Okuma, Onga-gawa, 20.IX.2000, AO; 6 males, 20 females, Hisayama-machi, Ino, Todoroki-gawa, Todoroki-bashi, 21.IX.2000, AO, L; 1 male, Chikushino-shi, Yoshiki, 10.V.1997, HN. **Nagasaki**: 3 males, 7 females, Omura-shi, Kori-gawa, 17.IX.2002, TH, L. **Nagasaki, Tsushima Islands**: 6 females, Tsushima-shi, Oku-azamo, 2.IX.1987, TI, L. **Kumamoto**: 3 males, 11 females, Minami-aso-mura, Hakusui, Nakamatsu, Aso Tanibito Museum, VII–X.2002, AO; 1 female, Minami-aso-mura, Hakusui, Terasaka-suigen, 19.XI.2001, AO, S; 14 males, 4 females, Minami-aso-mura, Hakusui, Taiko-bashi, 3.V.2002, AO; 3 females, Ryuhoku-cho, Hikawa-bashi, 4.V.2002, AO; 1 male, 5 pupae, 2 prepupae, 1 larva, Sagara-mura, Yanase, Gongengawara, Kawabe-gawa, IX.2002, AO. **Oita**: 1 female, Nakatsu-shi, Yabakei-machi, Miyazono, Yamaguni-gawa, 17.IV.2004, TH, L. **Miyazaki**: 3 females, Aya-cho, Yotsue, Honjo-gawa, 40 m, 21.IV.2004, TH, L.

Remarks. This is the commonest hydroptilid in the 4 main islands of Japan (Hokkaido, Honshu, Shikoku, Kyushu). The male of this species is similar to that of *H. thuna* Oláh, 1989, but distinguishable from the latter as follows: The ventral plate of the subgenital plate is broadly triangular and acuminate apically and the subapical process of the phallic apparatus is slender in *H. phenianica*; in *H. thuna* the ventral plate is produced distally to form a slender pointed process and subapical process is strap-like. The female of this species is distinguished from that of *H. thuna* by having 2 subquadrate sclerites on the dorsum of segment VIII.



FIGURES 1–2. 1, *Hydroptila phenianica*: A–C, male; A—abdominal segments VII–X, lateral; B—genitalia, dorsal; C—same, ventral; D–G, female; D—abdominal segment VIII, lateral; E—same, dorsal; F—abdominal segments VI–X, ventral; G—bursa copulatrix, ventral. 2, *H. thuna*: A–C, male; A—abdominal segments VII–X, lateral; B—genitalia, dorsal; C—same, ventral; D–F, female; D—abdominal segment VIII, lateral; E—same, dorsal; F—abdominal segments VII–X, ventral. Abbreviations: VI–X, abdominal segments VI–X; dpl—dorsal plate; dl spl—dorsal lobe of subgenital plate; ia—inferior appendage; pa—phallic apparatus; sub pr—subapical process; vp spl—ventral plate of subgenital plate.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu, Tsushima Islands), Korea, Russian Far East (continental parts).

Habitat. Adults were collected from the middle and lower reaches of streams.

Japanese name. Matsui-hime-tobikera.

Hydroptila thuna Oláh, 1989

(Figs. 2, 14A)

Hydroptila thuna Oláh, 1989, 281–282, fig. 26, male, Vietnam.

Hydroptila triangularis Wells & Dudgeon, 1990, 168–169, figs. 14–16, male, female,

Hong Kong; synonymized by Wells & Malicky (1997).

Hydroptila apiculata Yang & Xue, 1992, 26–27, male, China; Arefina, 2004, 210–211, figs 6–14, male, female, Russia (Khabarovsk, Primorye); synonymized by Malicky & Chantaramongkol (2007).

Hydroptila molione Malicky, 2004b, 293–294, fig. 3, male, Nepal; synonymized by Malicky & Chantaramongkol (2007).

Hydroptila phenianica: Shimura, 2010, 49, Japan (Yonaguni Island), misidentification.

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker markings near half way and at apices.

Male. Lengths of forewing, hindwing and body 2.0–2.4 mm, 1.6–1.9 mm and 2.1–2.5 mm, respectively (n=5). Antennae 29–30-segmented; length 1.2–1.5 mm (n=5). Ventral process of sternite VII small, apically subacute. Segment IX with large subtriangular apico-lateral apodemes. Dorsal plate semi-membranous, parallel sided for basal 3/4 and semi-circular with deep median slit in distal 1/4 in dorsal view. Subgenital plate shorter than dorsal plate, composed of sclerotized ventral plate and membranous dorsal lobe; ventral plate triangular in ventral view with sharply produced slender apical process and 2 fine setae at base of apical process. Phallic apparatus slender with long strap-like subapical process with short titillator. Inferior appendages almost parallel sided with apex subacute in lateral view, in ventral view narrowly triangular, directed latero-posteriad.

Female. Lengths of forewing, hindwing and body 2.4–2.9 mm, 2.0–2.6 mm and 2.9–3.4 mm, respectively (n=5). Antennae 23-segmented; length 1.1 mm (n=2). Abdomen increasingly darker and more setose from segment I to segment VII. Sternite VI with small ventral process. Segment VIII strongly sclerotized, tergite and sternite fused laterally; tergite with middle and 2 lateral excisions on posterior margin, and 3 pairs of marginal setae; sternite with posterior margin broadly rounded; in ventral view internal triangular sclerite extended from anterior margin to segment VII. Bursa copulatrix thin, lozenge-shaped.

Specimens examined. **Okinawa, Yaeyama Islands:** 1 male, Yonaguni-jima, Tabaru-gawa, headwater, 11.IV.2008, N. Shimura; 4 males, 8 females, *ibid.*, 3.III.2009, N. Shimura; 45 males, 19 females, *ibid.*, 4.IV.2010, N. Shimura; 1 male, 1 female, Ishigaki-jima, Miyara-gawa, Kawahara-bashi, 12.IV.2005, TI, S; 1 male, Ishigaki-jima, Nagura-gawa, Toru-bashi, 12.III.2009, TI, L.

Remarks. This is one of the most widespread hydroptilid species in East Asia (Malicky & Chantaramongkol 2007). In Japan, it is found only in the Yaeyama Islands, the most southwestern islands, near Taiwan. It can be distinguished from *H. phenianica* by the features given in remarks for that species.

Distribution. Japan (Yaeyama Islands), Russian Far East (continental parts), China, Taiwan, Hong Kong, Raos, Thailand, Vietnam, Nepal, Sumatra. New to Japan.

Habitat. Adults were collected from streams in mountain and lowland areas.

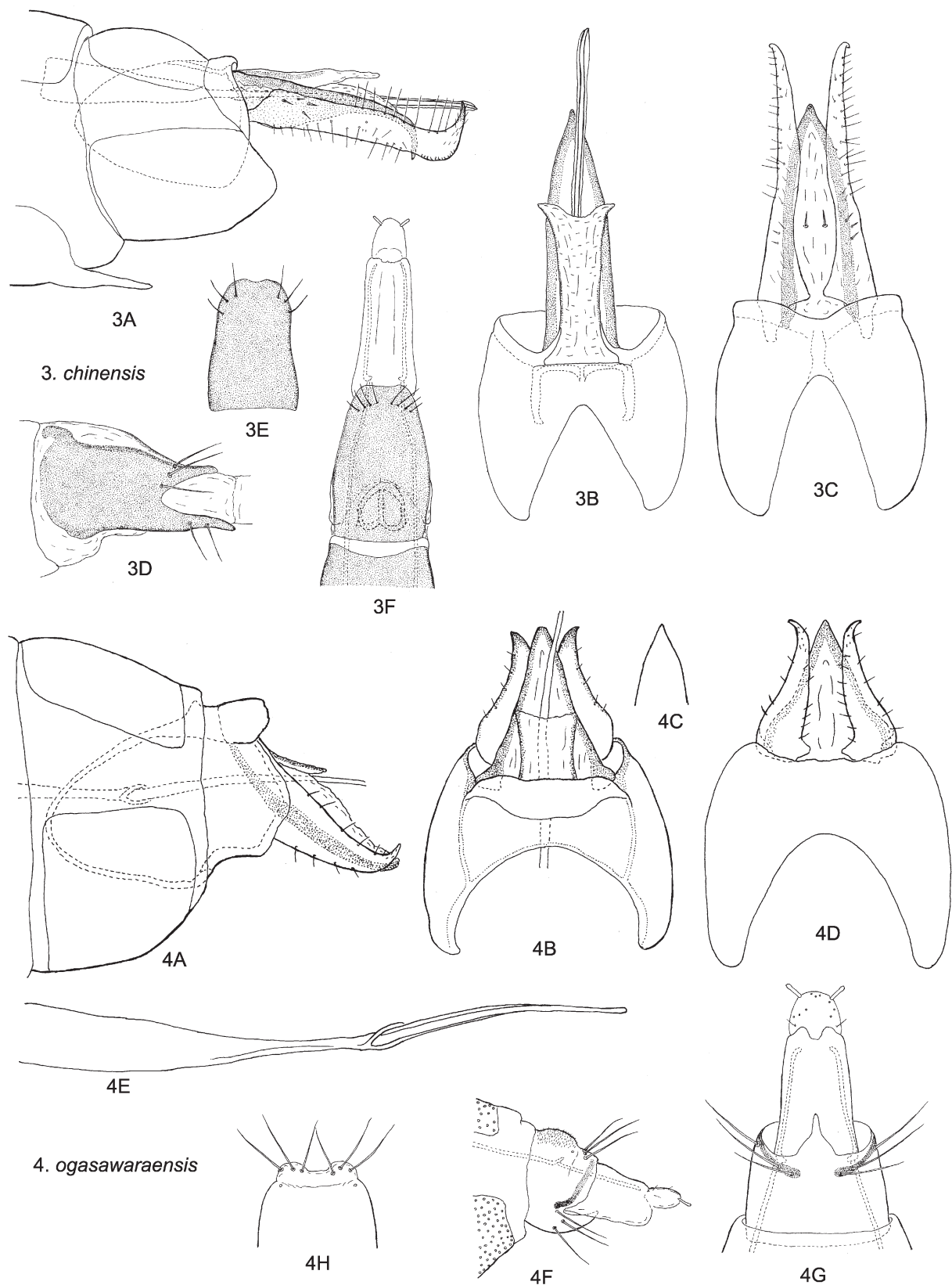
Japanese name. Ajia-hime-tobikera (newly given here).

Hydroptila chinensis Xue & Yang, 1990

(Figs. 3, 14B)

Hydroptila chinensis Xue & Yang, 1990, 126–127, 15–16, fig. 4, male, female, China; Arefina *et al.*, 2002, 97–98, figs 1–5, male, female, Russian Far East (continental parts), Japan (Honshu).

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker markings at about half length and at apices.



FIGURES 3–4. **3, *H. chinensis*:** A–C, male; A—abdominal segments VII–X, lateral; B—genitalia, dorsal; C—same, ventral; D–F, female; D—abdominal segments VIII, lateral; E—same, dorsal; F—abdominal segments VII–X, ventral. **4, *H. ogasawaraensis*:** A–E, male; A—abdominal segments VIII–X, lateral; B—genitalia, dorsal; C—apex of subgenital plate, variation, dorsal; D—genitalia, ventral; E—phallic apparatus, lateral; F–H, female; F—abdominal segments VII–X, lateral; G—same, ventral; H—abdominal segment VIII, dorsal.

Male. Lengths of forewing, hindwing and body 2.2–2.9 mm, 1.8–2.6 mm and 2.5–3.1 mm, respectively (n=5). Antennae 29–32-segmented; length 1.2–1.5 mm (n=5). Ventral process of sternite VII short, subacute apically. Segment IX with rounded antero-lateral apodemes. Dorsal plate almost completely membranous, thin and elongate in lateral view, in dorsal view rectangular with divergent postero-lateral angles. Subgenital plate elongate, 1.5 times length of dorsal plate; thin, triangular with strongly sclerotized lateral margins, membranous medially in dorsal and ventral views; in lateral view directed posteriad for basal 3/4 and then curved ventrad for apical 1/4. Phallic apparatus almost straight, with long narrow flanges; apical process and titillator absent. Inferior appendages stout and longer than subgenital plate; in lateral view almost parallel-sided, directed caudad for proximal 5/6, abruptly tapered and curved dorsad at 1/6 length; with many setae, in particular bearing long sharp setae for distal 1/2 of dorsal margin.

Female. Lengths of forewing, hindwing and body 2.5–2.8 mm, 2.0–2.4 mm and 2.6–3.3 mm, respectively (n=5). Antennae 24–25-segmented; length 0.9–1.0 mm (n=5). Abdomen increasingly darker from anterior to posterior; segment VII the darkest and most hirsute. Ventral process of sternite VI small, apically subacute. Segment VIII tapered slightly in lateral view; tergite and sternite fused, forming heavily sclerotized annulus; in dorsal view tergite rectangular with rounded postero-lateral angles and 3 pairs of subapical setae; sternite also elongate rectangular with rounded postero-lateral angles and 4 pairs of setae. Bursa copulatrix heart-shaped.

Specimens examined. **Hokkaido:** 11 males, 77 females, Shibetsu-cho, Po-gawa, Pogawa-bashi, 22.VII–12.VIII.1996, TI *et al.*, L; 78 males, 193 females, Shibecha-cho, Kayanuma, Shirarutoro-etoro-gawa, Tomi-bashi, 25.VII.2008, TI, P; 90 males, 266 females, Shibecha-cho, Kayanuma, Shirarutoro-etoro-gawa, 17 m, 16.VII.2009, TI, P; 1 male, Shibecha-cho, Shirarutoro-ko, Togan, 25.VII.2008, TI, L; 1 female, Kushiro-shi, Aikoku, 2.VIII.1986, M. Itou; 1 male, 1 female, Kushiro-shi, Iwabokki, 3.VII.1987, M. Itou; 1 male, Kushiro-shi, Akan-cho, Akan-kohan, Ibeshibetsu, 21.IX.1996, TI & AO, L; 3 males, 6 females, *ibid.*, 26.VII.1999, TI & AO, L; 5 females, *ibid.*, 9.VIII.2007, TI, L; 1 male, 12 females, Kushiro-shi, Akan-cho, Ibeshibetsu-gawa, 425m, 14.VII–13.IX.1997, TI & AO, L; 1 male, 20 females, *ibid.*, 27.VII.1999, TI & AO, L; 1 female, Sarufutsu-mura, Sarufutsu-gawa, Shobu-bashi, 31.VII.2007, TI, L; 10 males, 5 females, Sarufutsu-mura, Nigori-kawa, Wakakusa-bashi, 1.VIII.2007, TI, P; 1 female, Horonobe-cho, Sarobetsu, Nakanoshima, small pond, 7.VII.2007, TI, S; 1 female, Honbetsu-cho, Benkeido, 21.VII.1980, TI, L; 1 female, Taiki-cho, Kimonto-gawa, Numakawa-bashi, 2.VIII.2007, TI, L. **Honshu. Niigata:** 5 females, Nagaoka-shi, Oyazawa, 9.VIII.2000, NKA, L (MKNM).

Remarks. The dorsal plate of male of this species was figured in lateral view but not in dorsal view in either the original description of Xue & Yang (1990) or the redescription of Arefina *et al.* (2002), probably due to its almost complete transparency. The male of this species is characterized by the elongate triangular dorsal and subgenital plates and upwardly curved inferior appendages. The female of this species resembles that of *H. phenianica*, the most abundant species in the main islands of Japan, but is distinguishable from that species by the long rectangular tergite of segment VIII.

Distribution. Japan (Hokkaido, Honshu), China, Russian Far East (continental parts).

Habitat. Adults were collected near lowland streams.

Japanese name. Chaina-hime-tobikera.

Hydroptila ogasawaraensis Ito, sp. nov.

(Figs. 4, 14B)

Hydroptila sp. Satake & Kuranishi, 2007, 283, Japan (Ogasawara Islands).

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker markings at about half length and at apices.

Male. Lengths of forewing, hindwing and body 2.0–2.5 mm, 1.8–2.1 mm and 1.8–2.2 mm (n=5), respectively. Antennae 28–31-segmented; length 1.1–1.3 mm (n=5). Ventral process of sternite VII short, subacute apically. Segment IX with rounded apico-lateral apodemes; a short, wide darkly sclerotized rectangular sclerite present at dorso-posterior margin, in lateral view directed slightly dorso-caudad. Dorsal plate membranous with sclerotized lateral edges, short and rectangular in dorsal view, in lateral view thin, rod-shaped. Subgenital plate semi-membranous with strongly sclerotized lateral edges, apically acute or subacute, twice as long as dorsal plate, triangular in lateral

view. Phallic apparatus slender with narrow flanges at basal 3/5–4/5. Inferior appendages sub-triangular in ventral and lateral views, angled ventrad for proximal 4/5 and curved dorso-laterad at distal 1/6, almost as long as subgenital plate; ventrally, flared outward at apices.

Female. Lengths of forewing, hindwing and body 2.1–2.7 mm, 1.8–2.3 mm and 2.0–2.5 mm, respectively (n=5). Antennae 24–26-segmented; length 0.8–1.0 mm (n=5). Segment VIII relatively short, with no distinct tergite or sternite; 3 pairs of marginal setae on each of dorsum and venter, thin transverse bands at base of ventral marginal setae; ventral margin distinctly protruded caudally at middle in ventral and lateral views. Bursa copulatrix thin, lozenge-shaped.

Holotype: Japan, Ogasawara Islands: 1 male, Chichi-jima, Ogasawara-mura, a headwater of Yasse-gawa (27°03'55" N, 142°13'08" E, 210 m), 19.II.2006, K. Satake, L (CBM-ZI 145405).

Paratypes: 3 males, same data as holotype (CBM-ZI 145406–145408); 3 females, type locality, 9.XII.2005, K. Satake (CBM-ZI 145409–145411).

Other specimens examined. **Ogasawara Islands, Chichi-jima:** 13 females, type locality, 28.X.2005, K. Satake, L (RBK); 9 females, *ibid.*, 9.XII.2005, K. Satake, L (RBK); 8 males, *ibid.*, 9.II.2006, K. Satake, L (RBK); 2 females, upper reaches of Okumura-gawa, 1.VII.2005, K. Satake, L (RBK); 1 male, 2 females, Ogasawara-mura, Okumura-gawa, Tokyo Fall, 27.X.2005, K. Satake, L.

Diagnosis. The male of this species is similar to that of *H. chinensis* in having the dorsal plate membranous and rectangular and subgenital plate triangular, but is clearly distinguishable from that species as follows: The dorsal and subgenital plates are slender and the proximal 5/6 of the inferior appendages are parallel-sided in lateral view in *H. chinensis*; whereas in *H. ogasawaraensis* the 2 plates are short and stout, and the inferior appendages are gradually tapered. The female of this species is clearly distinguished from those of other congeneric Japanese species by having an apico-mesal projection on segment VIII.

Etymology. The specific name refers to the name of the islands where this species was collected.

Distribution. Japan (Ogasawara Islands). Endemic to Ogasawara Islands.

Habitat. Adults were collected from upper reaches of small streams (K. Satake, personal communication).

Japanese name. Ogasawara-hime-tobikera.

Hydroptila oguranis Kobayashi, 1974

(Figs. 5, 14C)

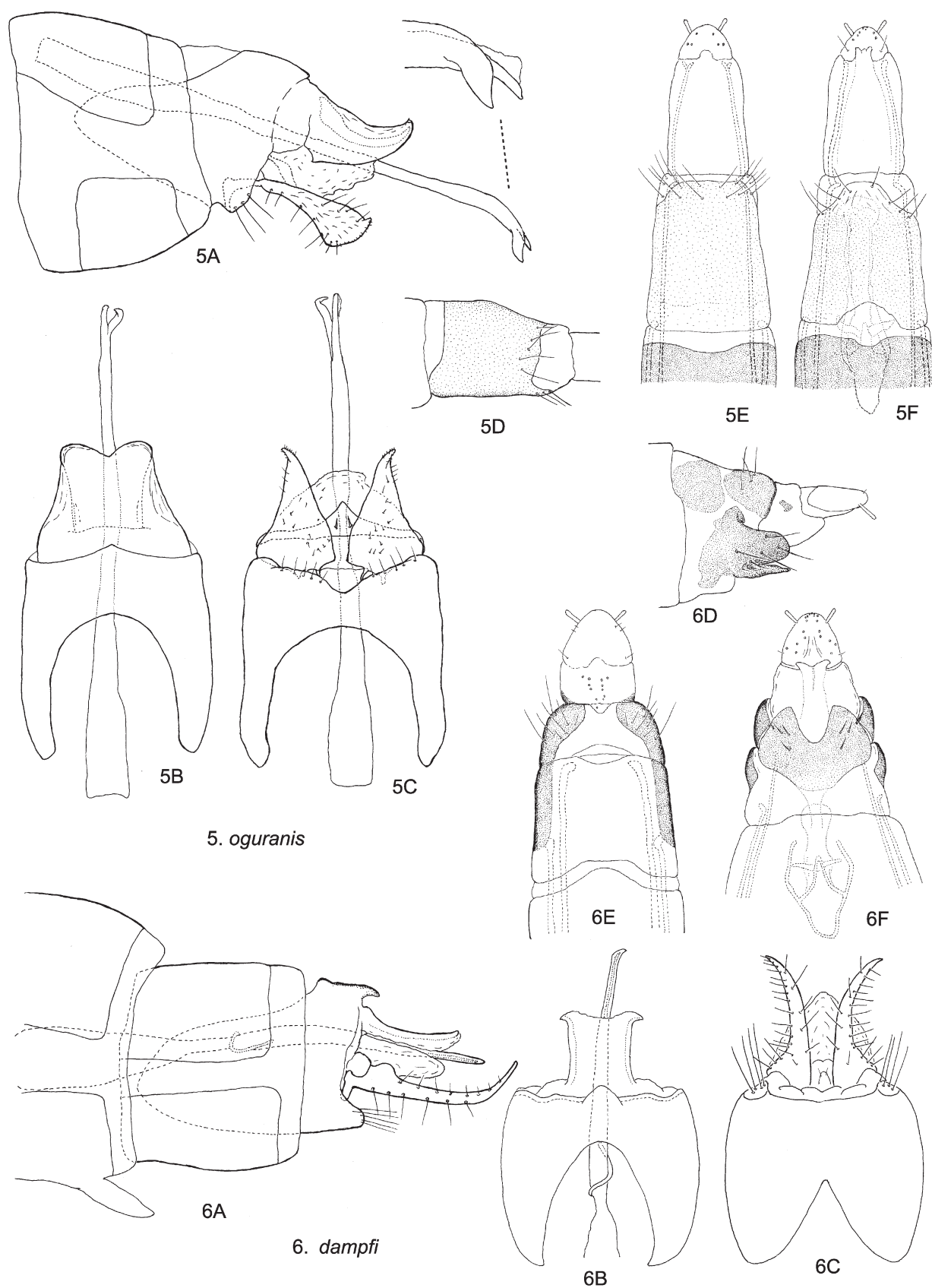
Hydroptila oguranis Kobayashi, 1974, 68–69, pl. 25, male, Japan; Ito *et al.*, 1998, figs 3–4, larva, case; Ito, 2005, 441, 446, fig. 21, male.

Hydroptila sp. Tanida *et al.*, 1999, 394.

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker markings at about half length and at apices.

Male. Lengths of forewing, hindwing and body 2.4–2.9 mm, 2.0–2.5 mm and 3.0–3.4 mm, respectively (n=5). Antennae 32–36-segmented; length 1.5–2.0 mm (n=5). Sternite VII ventral process small, apically subacute. Segment IX with large antero-lateral apodemes, postero-ventral margin with shallow concavity mesally and postero-dorsal margin slightly produced and pointed mesally. Dorsal plate semi-membranous, in dorsal view subquadrate with shallow cleft on distal margin, rounded postero-lateral angles, in lateral view subtriangular and curved upward apically; internal sclerite subquadrate in dorsal view and dorsally curved and plate-like in lateral view. Subgenital plate composed of very wide triangular ventral plate and membranous lobe; ventral plate with 2 short setae ventrally. Phallic apparatus slender, with short hook-like subapical process, without titillator. Inferior appendages slightly shorter than dorsal plate, in ventral view triangular with apices directed postero-laterad, in lateral view gradually expanding distally, apex acute, forming small caudally directed process apically.

Female. Lengths of forewing, hindwing and body 2.8–3.4 mm, 2.2–2.8 mm and 3.1–3.7 mm, respectively (n=5). Antennae 26–27-segmented; length 0.9–1.2 mm (n=5). Abdomen increasingly darker from anterior to posterior; segment VII darkest and most hirsute. Ventral process of sternite VI small, apically subacute. Segment VIII in lateral view tergite slightly shorter than sternite, tergite and sternite fused laterally and weakly sclerotized; tergite rectangular with several marginal setae; sternite with median concavity on proximal margin, distal margin produced to form broad median lobe with 4 pairs of marginal setae. Bursa copulatrix thin, lozenge-shaped.



FIGURES 5–6. **5, *H. ogurani*:** A–C, male; A—abdominal segments VIII–X, lateral; B—genitalia, dorsal; C—same, ventral; D–F, female; D—abdominal segment VIII, lateral; E—abdominal segments VII–X, dorsal; F—same, ventral. **6, *H. dampfi*:** A–C, male; A—abdominal segments VII–X, lateral; B—genitalia, dorsal; C—same, ventral; D–F, female; D—abdominal segments VII–X, ventro-lateral; E—same, dorsal; F—same, ventral.

Immature stages. The final instar larva and case were described by Ito *et al.* (1998).

Specimens examined. **Hokkaido:** 32 males, 8 females, 7 larvae, Shibetsu-cho, Salmon Park, 6.VI–22.VII.1996, TI & AO, S; 1 male, 61 females, Shibetsu-cho, Po-gawa, Pogawa-bashi, 22.VII–12.VIII.1996, TI *et al.*, L & S; 2 females, Shibecha-cho, Kayanuma, Ikoinoie, 7.VIII.2006, TI, L; 1 male, 2 females, *ibid.*, 25.VII.2008, TI, L; 2 males, Shibecha-cho, Kayanuma, Shirarutoro-etoro-gawa, Tomi-bashi, 25.VII.2008, TI, P; 3 males, 1 female, *ibid.*, 16.VII–26.VIII.2009, TI, L; 2 males, 2 females, Shibecha-cho, Shirarutoro-ko, Togan, 25.VII.2008, TI, L; 6 males, 2 females, Kushiro-cho, Oboro-gawa, Oboro-bashi, 21.VI.1987, N. Kobayashi; 9 males, 57 females, Taiki-cho, Kimonto-gawa, Numakawa-hashii, 2.VIII.2007, TI, L; 5 males, 51 females, Eniwa-shi, Kashiwagi-gawa, Fukajo-bashi, 21.VI–12.IX.2000, TI & AO, L; 4 males, 26 females, *ibid.*, 25–30.VI.2001, TI, L; 5 males, 2 females, Eniwa-shi, Kashiwagi-gawa, Kosoku, 25.VI.2000, TI, S; 5 males, 28 females, Eniwa-shi, Ichankoppe-zawa, 220 m, 19.VII.2010, TI, L; 1 male, 1 female, Eniwa-shi, Ichankoppe-zawa, 300 m, 10.VIII.2010, TI, L; 1 male, 2 females, Eniwa-shi, Moizari-gawa, Saiwai-bashi, 20.VII.2010, TI, L; 3 males, 6 females, Eniwa-shi, Megumino-chuo-koen, 13.VII.2003, TI & AO, S; 3 females, Chitose-shi, Chitose-gawa, Daiichi-usakumai-bashi, 18.VII.2001, TI & AO, L; 10 females, Chitose-shi, Bibi-gawa, Chitose-ko, 8.VII–25.VIII.2001, TI & AO, L; 1 male, 5 females, *ibid.*, 28.VII–20.VIII.2007, TI, L; 8 males, 21 females, Chitose-shi, Bibi-gawa, Bibi-bashi, 16.VIII.1993, TI, L; 11 males, 1 female, *ibid.*, 29.VII.1998, TI, L; 94 males, 171 females, *ibid.*, 25.VII–24.IX.1999, TI & AO, L & S; 4 males, 2 females, *ibid.*, 15.VII.2001, TI & AO, L; 1 male, *ibid.*, 8.IX.2002, TI, L; 2 males, 39 females, *ibid.*, 4.VIII–6.IX.2007, TI, L; 17 males, 33 females, Tomakomai-shi, Dainibibi-bashi, 15.VII.2001, TI & AO, L; 57 males, 76 females, 3 larvae, Tomakomai-shi, Bibi-gawa, Matsubibi-bashi, VII–VIII.1990, TI, R; 1 male, 10 females, *ibid.*, 9.IX.1990, TI, L; 3 males, 37 females, *ibid.*, 18.VIII.1991, TI, L; 4 males, *ibid.*, 29.VII.1998, TI & AO, S; 3 males, 13 females, *ibid.*, 20.VIII.2007, AO, L; 123 males, 74 females, Tomakomai-shi, Bibi-gawa, Uenae-bashi, 9.VII–6.VIII.1977, TI, R & L; 50 males, 75 females, *ibid.*, 24.VI.1978, TI, L; 132 males, 1904 females, *ibid.*, 22–30.VII.2001, TI & AO, S & L; 114 males, 435 females, *ibid.*, 3.VIII.2007, TI, L; 35 males, 301 females, *ibid.*, 16.VIII.2008, TI, L; 313 males, 763 females, 8 pupae, 4 prepupae, Tomakomai-shi, Uenae, Bibi-gawa, 4 m, 8.VII–5.VIII.2010, TI, L; 2 males, Tomakomai-shi, Utonai-ko, Seigan, 28.VIII.1976, TI, S; 1 male, *ibid.*, 6.VIII.1977, TH; 10 males, 37 females, *ibid.*, 22.VII.2004, TI, L; 5 females, *ibid.*, 17.VIII.2007, TI, L; 47 males, 37 females, Tomakomai-shi, Utonai-ko, near Yuburi-gawa-kako, 22.VII.2001, TI & AO, S; 1 female, Toyako-cho, Tsukiura, Toya-ko, 20.VI.2001, TI, S; 45 males, 30 females, Nanae-cho, Onuma, Choshiguchi, 31.V–23.VI.2003, TI & AO, S; 37 males, 87 females, *ibid.*, 4.VIII.2006, TI & TH, L; 1 male, 4 females, *ibid.*, 1.VII.2008, TI, L; 5 females, Nanae-cho, Onuma, Tsukimi-bashi, 31.V.2003, TI & AO, L; 59 females, *ibid.*, 23.VI.2003, TI & AO, L; 2 females, Shiriuchi-cho, Idesu-gawa, Idesu-bashi, 6.VII.1998, AO, L.

Honshu. **Tokyo:** 3 males, 5 females, Fussa-shi, Tama-gawa, Nagata-bashi, 23.VII.1993, TN. **Kanagawa:** 2 males, 4 females, Sagami-hara-shi, Shiroyama-machi, Tanigahara, 21.IV.1984, TN; 10 males, 6 females, Yokosuka-shi, Ashina, 8.XI.2000, TN. **Shizuoka:** 1 male, Shizuoka-shi, Minami-abe, Suruga-ohashi, 2.VII.2005, TH, L; 130 males, 42 females, Shizuoka-shi, Ashikubo, Matsuzaki-bashi, 1.VI–21.XII.2005, TH, L; 11 females, Shimizu-cho, Kakida-gawa, 27.V.2001, TN & KT, L. **Shiga:** 3 males, 1 female, Otsu-shi, Shimo-sakamoto, Otsu Hydrobiological Station, 6.VIII.1987, K. Hiramatsu, L (LBM); 2 females, Hikone-shi, Iso, 9.IX.1986, N. Kobayashi, L (LBM); 1 female, Hikone-shi, Shiga-kenritsu-daigaku, 3–4.X.1998, AO; 12 males, 18 females, Takashima-shi, Imazu-hama, 2.VII.1986, N. Kobayashi, L (LBM); 7 males, 8 females, Omi-hachiman-shi, Maki, 8.IX.1986, M. Nishino (LBM); 1 male, *ibid.*, 29.V.1987, KT, S (LBM); 1 female, Nishi-azai-cho, Oura-koen, 6.XI.1986, KT (LBM); 1 female, *ibid.*, 3.VI.1988, KT, L (LBM); 11 females, Biwa-ko, Harie-hama, 24.V.1988, TN; 3 males, Koka-shi, Minakuchi, Nasaka, Imai-ke, Daichiji, 4.VII.2009, NKA, L (MKNM). **Hyogo:** 1 male, Shiso-shi, Yamasaki-cho, Michi-no-eki, 22.IX.1997, HN; 1 male, 1 female, Shiso-shi, Yamasaki-cho, Ibo-gawa, 8.VIII.2001, AO. **Wakayama:** 1 female, Kozagawa-cho, Hirai, 12–17.VII.1999, M. Maruyama. **Shikoku.** **Tokushima:** 1 male, Anan-shi, Naka-gawa, 11–13.X.1998, S. Tsukaguchi. **Kochi:** 1 male, 1 female, Kami-shi, Tosa-yamada-cho, Sano, 5.X.2000, HN; 2 females, Motoyama-cho, Teraie, Yoshino-gawa, 250 m, 24.IX.2002, TH, L. **Kyushu.** **Nagasaki, Tsushima Islands:** 2 females, Tsushima-shi, Azamo, near estuary, 9.VII.2009, RBK, L (RBK). **Kumamoto:** 3 males, 11 females, Minami-aso-mura, Hakusui, Nakamatsu, Aso-Tanibito Museum, VII–IX.2002, AO; 1 male, Minami-aso-mura, Hakusui, Terasaka-suigen; 19.XI.2001, AO, S. **Miyazaki:** 1 female, Aya-cho, Yotsue, Honjo-gawa, 21.IV.2004, TH, L. **Kagoshima, Amami Islands:** 1 female, Tatsugo-cho, Toguchi-gawa, Kawato-bashi, 18.III.1999, TI & AO, L.

Remarks. The male of this species is similar to those of *H. phenianica* and *H. thuna* in having triangular inferior appendages and a somewhat quadrate dorsal plate, but it is clearly distinguished from the latter by the extremely short ventral plate of the subgenital plate, thick triangular inferior appendages, and a phallic apparatus bearing a very short subapical process. The female of this species is distinguishable from congeneric Japanese species by the weakly sclerotized tergite and sternite of abdominal segment VIII which are rectangular with slightly convex apical margins.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu, Tsushima Islands, Amami Islands). Endemic to Japan.

Habitat. Adults were collected near lowland lakes, streams in marshes and artificial creeks.

Japanese name. Ogura-hime-tobikera.

Hydroptila dampfi Ulmer, 1929

(Figs. 6, 14C)

Hydroptila dampfi Ulmer, 1929, 264–266, figs. 10–12, male, Germany; Malicky, 2004a, 52, male.

Hydroptila itoi Kobayashi, 1977, 5, 12, pl. 4, male, female, Japan; Ito & Kawamura, 1980, 113–121, figs. 1–27, pupa, larva, case, habitat, life cycle, feeding behavior; Morse *et al.*, 2001, 102, Russian Far East (continental parts); Ito, 2005, 442, 444, 446, figs. 19, 21, male, larva, case. **New synonym.**

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker markings at about half length and at apices.

Male. Lengths of forewing, hindwing and body 2.5–2.8 mm, 2.1–2.2 mm and 2.6–3.2 mm, respectively (n=5). Antennae 34–37-segmented and 1.5–1.7 mm long (n=5). Ventral process of sternite VII short, subacute apically. Segment IX short, with large antero-lateral apodemes, posterior margin with small sub-triangular process postero-mesally and small rounded lobes postero-laterally. Dorsal plate semi-membranous, quadrate with divergent postero-lateral angles and slight concavity on apical margin. Subgenital plate membranous, triangular in ventral view, with 2 fine setae mesally. Phallic apparatus slender, almost straight, with short spiral titillator at half length. Inferior appendages slender, elongate, 1.5 times length of dorsal plate; directed posterad in proximal 2/3 and gently curved upward at apical 1/3, with apex subacute in lateral view; small swelling present near base of dorsal margin.

Female. Lengths of forewing, hindwing and body 3.0–3.3 mm, 2.8–2.9 mm and 3.0–3.4 mm, respectively (n=5). Antennae 24–28-segmented; length 0.9–1.1 mm (n=5). Abdomen increasingly darker from segment I to segment VIII. Ventral process of sternite VI small, subacute apically. Segment VIII with tergite in form of 4 small roundish sclerites, sternite large; 4 dorsal sclerites arranged in 2 longitudinal series; anterior tergite without setae, each of posterior tergites with 5–7 setae; sternite convex laterally, deeply excised posteriorly, convex anteriorly, with 4 pairs of strong setae. Bursa copulatrix narrowly lozenge-shaped.

Immature stages. Pupae and larvae have been described by Ito & Kawamura (1980).

Specimens examined. **Hokkaido:** 1 female, Shibetsu-cho, Sokippu-kaomanai-gawa, 12.VIII.1996, TI & AO, S; 1 male, Shibecha-cho, Kayanuma, Ikoinoie, 6.X.2003, TI & AO, L; 42 males, 32 females, *ibid.*, 29.VIII.2005, TI, L; 1 female, *ibid.*, 7.VIII.2006, TI, L; 8 males, 4 females, Kushiro-shi, Akan-cho, Ibeshibetsu-gawa, 425 m, 13.IX.1999, TI, L; 5 males, 2 females, Kushiro-shi, Akan-cho, Akan-kohan, Ibeshibetsu, 9.VI.1979, TI, R; 1 female, *ibid.*, 10.IX.1995, TI & AO, S; 64 males, 44 females, *ibid.*, 23.VII–21.IX.1996, TI & AO, L & S; 12 males, 3 females, *ibid.*, 14.VII–13.VIII.1997, TI & AO, L; 10 males, 6 females, *ibid.*, 21.VIII.1998, TI & AO, L; 4 males, 7 females, *ibid.*, 26.VII.1999, TI & AO; 204 males, 78 females, Kushiro-shi, Akan-cho, Akan-kohan, Churui, 14.IX.1999, TI, L; 3 males, 39 females, Sarufutsu-mura, Mokeuni-numa, 31.VII.2007, TI, L; 2 males, 3 females, Chitose-shi, Chitose-ko, 8.VII–25.VIII.2001, TI & AO, L; 2 females, Tomakomai-shi, Uenae, Bibi-gawa, 4 m, 8.VII–5.VIII.2010, TI, L; 6 males, 5 females, Tomakomai-shi, Utonai-ko (type locality of *H. itoi* Kobayashi, 1977), 7.VII–28.VIII.1976, TI, S; 186 males, 39 females, *ibid.*, 9.VII–6.VIII.1977, TI & TH, L & R; 1 male, 2 females, 2 pupae, *ibid.*, 20.VII.1996, TI; 11 males, 8 females, *ibid.*, 20.VII.1997, TI; 54 males, 39 females, *ibid.*, 29.VII.1998, TI & AO, S & L; 5 males, 1 female, *ibid.*, 18.VI.1999, TI, L; 8 males, 1 female, *ibid.*, 22.VII.2001, TI & AO, S; 80 males, 28 females, *ibid.*, 22.VII.2004, TI, L; 46 males, 5 females, *ibid.*, 12.VIII.2007, TI, L; 2 males, Nanae-cho, Onuma, Choshiguchi, 23.VI.2003, TI & AO, S; 1 male, 1 female, *ibid.*, 4.VIII–11.IX.2006, TI and TH, L; 4 males, Nanae-cho, Onuma, Tsukimi-bashi, 23.VI.2003, TI & AO, L. **Honshu. Yamanashi:** 20 males, 4 females, Fuji-

kawaguchiko-machi, Kawaguchi-ko, Oishi, 830 m, 1.VI.1994, TH. **Shizuoka**: 102 males, 71 females, Fujieda-shi, Midori-cho, Aoi-ke, 17.VI.2005, TH, L. **Shiga**: 3 males, 2 females, Biwa-ko, Yamashita-wan, 13.IV.1977, TI, R; 33 males, 146 females, Otsu-shi, Shimo-sakamoto, Otsu Hydrobiological Station, 20.VII.1984, KT, L (LBM); 5 males, 5 females, *ibid.*, 20.VII.1984, KT, L; 5 males, *ibid.*, 22–23.X.1985, H. Nishida (LBM); 4 males, 10 females, *ibid.*, 3.VII.1986, N. Kobayashi, L (LBM); 9 males, 7 females, *ibid.*, 3.VII.1987, KT, L (LBM); 2 females, Otsu-shi, Ogoto-kita, 6.VIII.1987, KT, L (LBM); 1 male, 1 female, Biwa-ko, Harie-hama, 24.V.1988, TN; 6 males, 10 females, Biwa-ko, Kusatsu, 10.VII.1999, HN; 30 females, Hikone-shi, Iso, 9.IX.1986, N. Kobayashi, L (LBM); 1 male, 1 female, Hikone-shi, Kenritsu-daigaku, 3–4.X.1998, AO; 4 males, Nagahama-shi, Nishi-azai-cho, Ourakoen, 6.XI.1986, KT (LBM); 1 male, *ibid.*, 3.VI.1988, KT, L (LBM); 1 female, Nagahama-shi, Nishi-azai-cho, Tsukide, 4.VII.1986, N. Kobayashi, L (LBM); 1 male, Nagahama-shi, Takatsuki-cho, Katayama, 6.XI.1986, N. Kobayashi, L (LBM); 1 male, 1 female, Omi-hachiman-shi, Maki, 8.IX.1986, M. Nishino, L (LBM); 3 males, 34 females, Higashi-omi-shi, Fuse, Fuse-tameike, 14–15.IX.2008, NKA, L (MKNM).

Remarks. This species is unique among Japanese *Hydroptila*, both in that it is the only species that is also common to the European fauna and in that it lives only in standing water. It is easily distinguished from other Japanese species by the shapes of the dorsal plate and the inferior appendages in the male and the 4 dark sclerites on segment VIII in the female.

Distribution. Japan (Hokkaido, Honshu), China, Russian Far East (continental parts), Europe.

Biology. The larvae live on macrophytes in lakes and marshes, feeding on the cell contents of filamentous algae (Ito & Kawamura 1980). The life cycle is univoltine, the first 4 larval instars taking about 10 months to complete development in Hokkaido, northern Japan (Ito & Kawamura 1980).

Japanese name. Numa-hime-tobikera.

Hydroptila spinosa Arefina & Armitage, 2003

(Figs. 7, 14D)

Hydroptila spinosa Arefina & Armitage, 2003, 15–16, figs. 1–2, male, female, Russian Far East (Sakhalin); Ito *et al.*, 2010, 65, Japan (Hokkaido).

Adult. Wings dark brown with several small lighter markings. Antennae brown with no darker markings.

Male. Lengths of forewing, hindwing and body 2.6–2.8 mm, 2.3–2.5 mm and 2.5–2.6 mm, respectively (n=5). Antennae 32–35-segmented; length 1.3–1.5 mm (n=5). Ventral process of sternite VII elongate, expanded in distal half, apex jagged. Segment VIII with pair of large setal patches ventrally. Segment IX with rounded antero-lateral apodemes, and lateral processes; processes directed latero-caudad, apically subacute. Dorsal plate transparent, semicircular in dorsal and ventral views, in lateral view subtriangular with subacute apex; median section membranous with several thick spines ventrally. Subgenital plate membranous, bilobed, distinctly shorter than dorsal plate. Phallic apparatus long, straight; subapical process slender, shorter than phallus and slightly curved mesad at apex. Inferior appendages strongly sclerotized, rod-shaped each with conspicuous seta subapically and several thin short setae apically; narrow in ventral view and strongly diverging.

Female. Lengths of forewing, hindwing and body 2.6–3.0 mm, 2.0–2.7 mm and 2.9–3.5 mm, respectively (n=5). Antennae 25–27-segmented; length 0.9–1.0 mm (n=5). Abdominal segments pale. Sternite VI with small ventral process. Segment VIII tergite and sternite indistinct, 3 pairs of long subapical setae ventrally and pair of setae dorsally; ventral sclerite dark and conspicuous, lozenge-shaped in ventral view, bearing numerous very fine spines on surface (visible under 400 magnification). Bursa copulatrix lozenge-shaped.

Specimens examined. **Hokkaido**: 2 males, 2 females, Shibe-cho, Kayanuma, Shirarutoro-etoro-gawa, Tomi-bashi, 16.VII.2009, TI, L; 222 females, Shibe-cho, Kayanuma, Shirarutoro-etoro-gawa, 17 m, 16.VII.2009, TI, P; 1 male, 3 females, Kushiro-shi, Akan-cho, Akan-kohan, Ibeshibetsu, 23.VII.1996, TI & AO, L; 5 males, 7 females, *ibid.*, 14.VII.1997, TI & AO, L; 1 male, 5 females, *ibid.*, 26.VII.1999, TI & AO, L; 1 male, 2 females, *ibid.*, 9.VIII.2007, TI, L; 1 male, 22 females, Kushiro-shi, Akan-cho, Ibeshibetsu-gawa, 425 m, 27.VII.1999, TI & AO, L; 1 male, 1 female, Kushiro-shi, Akan-cho, Akan-panke-to, 14.VII.1997, TI & AO, L; 3 males, 17 females, *ibid.*, 10.VII.1998, TI & AO, L; 3 males, 2 females, Obihiro-shi, Kawanishi-cho, Kikankogawa, 4–21.VII.1995, AO, M; 3 males, 37 females, Wakkanai-shi, Koitai, Masuhoro-gawa, 20.VIII.1997, TI & AO, L; 6 males, 28 females, *ibid.*, 9.VIII.1999, TI & AO, L; 3 males, 5 females, Horokanai-cho, Shumarinai,

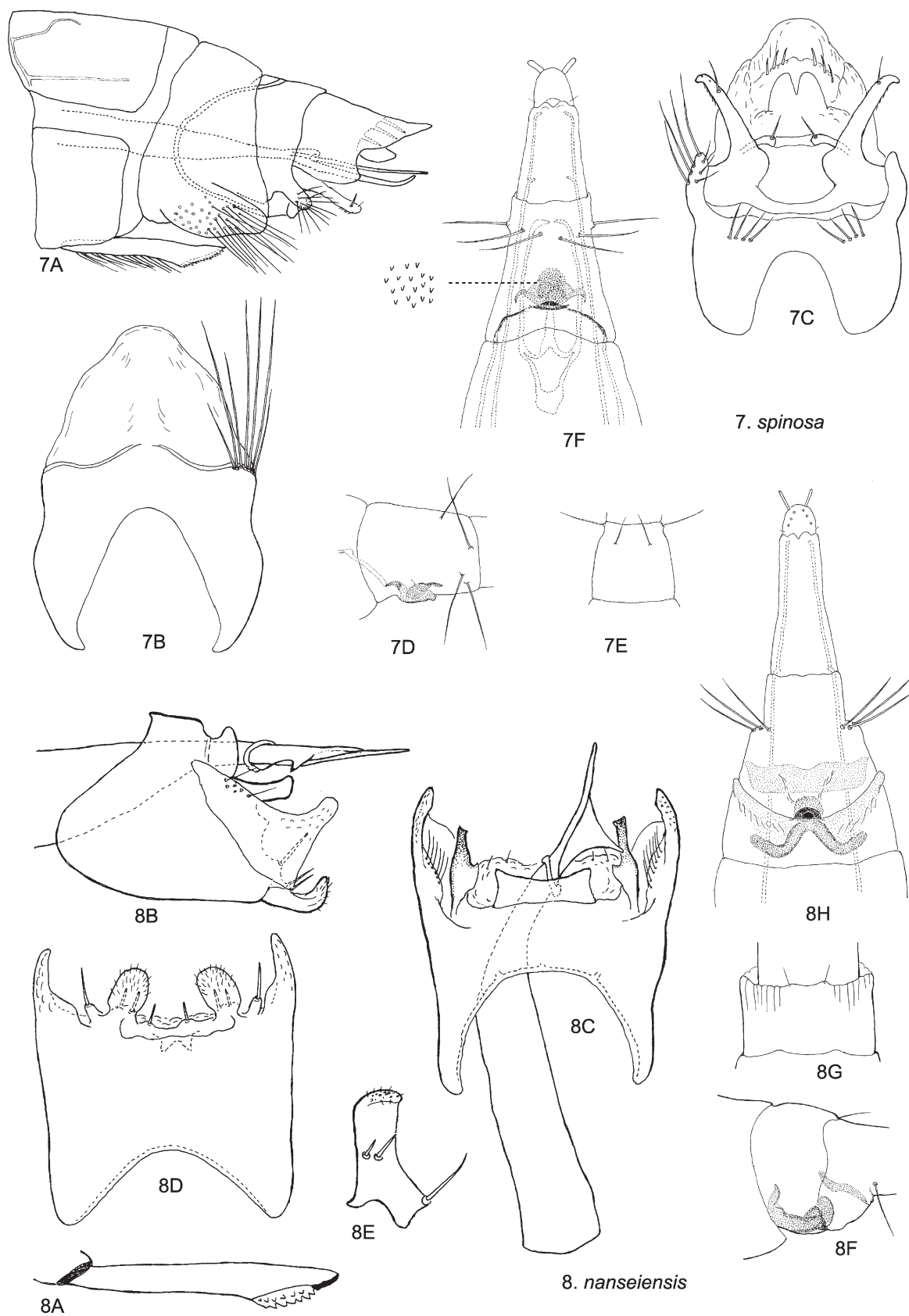
10.VIII.1999, TI & AO, L; 6 males, 11 females, Sapporo-shi, Kannon-zawa, 12.VII.1998, K. Sugisima; 1 male, 8 females, Sapporo-shi, Jozankei, Otarunai-gawa, 13.VIII.1974, TH, L; 8 males, 4 females, *ibid.*, 26.VII.1976, T. Kumata & M. Furukawa; 1 male, 4 females, Eniwa-shi, Izari-gawa, Honryu-nigo-bashi, 21.VIII.2009, TI, L & P; 3 females, Eniwa-shi, Izari-gawa, Suisei-bashi, 17.VIII.2001, TI, L; 1 female, Eniwa-shi, Izari-gawa, Eniwa-ohashi, 9–15.VII.2005, TI, L; 1 female, Eniwa-shi, Kashiwagi-gawa, Fukajo-bashi, 25–30.VII.2000, TI & AO, L; 1 female, *ibid.*, 25–30.VI.2001, TI, L; 39 males, 35 females, Eniwa-shi, Rarumanai-gawa, Hakusen-no-taki, 15–21.VII.2001, TI, L; 17 males, 74 females, Chitose-shi, Monbetsu-gawa, 240 m, 14.VII.2000, TI *et al.*, L; 2 females, Chitose-shi, Naibetsu-gawa, 18.VIII.1990, TI, L; 1 male, 8 females, *ibid.*, 15.VII.2001, TI & AO, L; 3 males, 134 females, Chitose-shi, Chitose-gawa, Daiichi-usakumai-bashi, 18.VII.2001, TI & AO, L & S; 13 males, 12 females, Erimo-cho, Utabetsu, small spring, VIII.1990, TI, R; 2 males, Tomakomai-shi, Takaoka, headwater of Horonai-gawa, 16.VI.1981, TI, R; 1 male, Kuromatsunai-cho, Utsai-gawa, 16.VII.2005, NK (NK); 1 female, Imakane-cho, Shimo-hakaimappu-gawa, 17.VII.2005, NK (NK); 2 males, Imakane-cho, Pirika-skii-jo, 27.VII.2004, TI, L; 1 male, 116 females, Shiriuchi-cho, Idesu-gawa, 8.VII.1978, TI, L; 9 males, 22 females, Shiriuchi-cho, Idesu-gawa, Idesu-bashi, 6.VII.1998, AO, L; 2 males, 5 females, Matsumae-cho, Oyobe-gawa, 2.VII.2005, NK, L (NK); 5 males, 21 females, Matsumae-cho, Oyobe-gawa, Gogo-bashi, 12.IX.2006, TI, L. **Honshu. Aomori:** 1 female, Mutsu-shi, Simo-ogawa, Shozu-gawa, 66 m, 17.IX.2010, TI, L. **Miyagi:** 1 female, Shichigashuku-machi, Yokokawa, 500 m, 5.VII.1998, TH, L. **Fukushima:** 1 female, Fukushima-shi, Iisaka-cho, Nakamoniwa, Surikami-gawa, 10.X.1997, TN. **Saitama:** 1 male, Chichibu-shi, Otaki-mura, Kudonosawa, 750 m, 19.V–10.VI.1998, T. Kagaya *et al.*, M. **Tokyo:** 5 males, 31 females, Hachioji-shi, Kamiange, 28.VIII.1991, TN. **Kanagawa:** 1 male, 1 female, Kiyokawa-mura, Shiomizu-gawa, 690 m, 5.VI.1994, TH, L; 2 females, Hadano-shi, Mizunashi-zawa, Hondani, 19.VI.1996, TN & AO; 11 males, 60 females, Yamakita-machi, Shiraishi-gawa, 26–27.IX.1998, TN. **Niigata:** 1 female, Shibata-shi, Uchinokawa-gawa, 200 m, 17.VII.1994, TH; 1 male, Minami-uonuma-shi, Yamato-machi, Mizunashi-gawa, 300 m, 18.VII.1994, TH, L; 5 females, Asahi-mura, Miomote-gawa, Futagoshima-shinrin-koen, 10.IX.2003, TI, L. **Nagano:** 1 male, Ueda-shi, Maruko-machi, Uchimura-gawa, 25.VI.1997, K. Tojo; 3 females, Fujimi-machi, Kamanashi-gawa, 850 m, 20.IX.1998, TH, L. **Shizuoka:** 2 males, 7 females, Shizuoka-shi, Kuro-mata, Mineyama, 300 m, 29.VIII.1995, TH, L; 4 males, 6 females, Shizuoka-shi, Umegashima, Rokurogi, 420 m, 26.VII.1995, TH, L; 3 females, Shizuoka-shi, Yunoshima, Warashina-gawa, 280 m, 15.X.1995, TH, L; 9 females, *ibid.*, 19.VIII.1997, TH, L; 2 males, 3 females, Shizuoka-shi, Shinma, Shinmaya-gawa, 110 m, 14.VI.2005, TH, L; 1 male, 1 female, Shizuoka-shi, Shinma, Shinmaya-gawa, 50 m, 21.V.2009, TH, L; 5 males, 20 females, Shizuoka-shi, Yokosawa, short cascade, 530–550 m, 6.VI–10.VII.2003, TH, L; 4 females, Shizuoka-shi, Hirano, Kurobe-zawa, 400 m, 27.VIII.1995, TH, L; 1 female, Shizuoka-shi, Nakahira, Abe-kawa, 250 m, 25.VII.1998, TH, L; 3 males, Shizuoka-shi, Nyujima, 9.IX.2008, TH, L; 3 females, Fujieda-shi, Kurata, 4.X.2003, TH, L; 1 male, Izu-shi, Jizo-gawa, 660 m, 2.VI.2009, TH, L; 4 males, 6 females, Mori-machi, Oguni-jinja, 5.VII–1.VIII.2000, K. Sugisima; 3 females, Fujieda-shi, Kurata, 4.X.2003, TH, L. **Mie:** 2 males, 5 females, Kisei-cho, 30.V.1999, H. Morita; 1 male, Kameyama-shi, Sekisuikei, 22.VII.2000, H. Morita. **Shiga:** 1 male, Koka-shi, Tsuchiyama, Okawara, 10.VIII.2008, NKA, L (MKNM). **Wakayama:** 4 females, Kozagawa-shi, Hirai, 12–17.VII.1999, M. Maruyama; 1 male, Tanabe-shi, Ryujin-mura, R 371, 850 m, 28.V.2004, TH, L. **Tottori:** 2 males, 5 females, Nichinan-cho, Yukawa, Wakamatsu-gawa, 580 m, 14.X.2002, TH, L. **Shikoku. Tokushima:** 1 female, Tsurugi-cho, Ichiu-son, Kuwadaira, Inotani, 900 m, 25.IX.2002, TH. **Ehime:** 1 male, 1 female, Kumakogen-cho, Omogo-mura, Kanmon, small stream, 23.V.1999, TI & AO, S; 9 females, Kumakogen-cho, Omogo-mura, Teppoishi-gawa, camp site, 22.V.1999, TI & AO, L; 6 males, 6 females, Uchiko-machi, Oda, Koyayama, 6–22.VI.2000, E. Yamamoto & M. Doi, M; 1 female, Uchiko-machi, Odamiyama, Hondani, 31.V–10.VI.2001, E. Yamamoto. **Kochi:** 2 males, Tsuno-cho, Higashi-tsuno-mura, Tengu-ike, 8.V.2004, MT, L; 1 male, 2 females, Shukunoge-shi, Isshobara, 30.IV.2004, MT, L; 1 male, 1 female, Nangoku-shi, Nakanokawa, 14.V.2004, MT; 1 male, 1 female, Nahari-cho, 30.VII.1996, S. Tsukaguchi. **Kyushu. Nagasaki:** 1 female, Saikai-shi, Oseto, Gotsu-gawa, Iwaseto-bashi, 7.VI.2001, T. Fujitani, L. **Miyazaki:** 26 males, 94 females, Nobeoka-shi, Kitagawa-cho, Kumata, Kita-gawa, 15 m, 22.IV.2004, TH, L.

Remarks. This species is characterized by having several spines on the ventral surface of the dorsal plate in the male and a heavily sclerotized lozenge-shaped ventral sclerite in the female.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu), Russian Far East (Sakhalin).

Habitat. Adults were collected mostly from streams in mountainous areas.

Japanese name. Toge-hime-tobikera.



FIGURES 7–8. **7, *H. spinosa*:** A–C, male; A—abdominal segments VII–X, lateral; B—genitalia, dorsal; C—same, ventral; D–F, female; D—abdominal segment VIII, lateral; E—same, dorsal; F—abdominal segments VII–X, ventral. **8, *H. nanseiensis*:** A–E, male; A—ventral process, lateral; B—genitalia, lateral; C—same, dorsal; D—same, ventral; E—left inferior appendage, dorso-lateral; F–H, female; F—abdominal segment VIII, lateral; G—same, dorsal; H—abdominal segments VII–X, ventral.

***Hydroptila nanseiensis* Ito, sp. nov.**

(Figs. 8, 14D)

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker markings apically.

Male. Lengths of forewing, hindwing and body 2.2–2.5 mm, 1.6–2.2 mm and 2.1–2.5 mm (n=5), respectively. Antennae 29–35-segmented; length 1.1–1.5 mm (n=5). Ventral process of sternite VII stout and elongate, apex with rugose sculpturing. Segment IX with rounded apodemes; lateral processes elongate, rod-shaped in dorsal and ventral views, in lateral view broadly triangular, apically rounded, surface rough towards apex. Dorsal plate composed of median plate and lateral arms: Median plate shorter than wide, in dorsal view rectangular, in lateral view slightly curved dorsad; lateral arms strongly sclerotized, rod-shaped with apices truncate in dorsal and lateral views. Subgenital plate membranous, thick, shorter than lateral arms of dorsal plate. Phallic apparatus stout and elongate, with titillator and triangular, flag-like subapical process. Inferior appendages short, rounded and leaf-like in ventral view, curved dorsad in lateral view, with 2 strong setae mesally and 1 long seta at baso-mesal angle.

Female. Lengths of forewing, hindwing and body 2.0–2.8 mm, 1.8–2.4 mm and 2.3–3.6 mm, respectively (n=5). Antennae 25–28-segmented; length 0.9–1.1 mm (n=5). Sternite of segment VIII trapezoidal with wide semi-circular concavity at distal margin in ventral view, dark median ring and conspicuous anterior triangular bands; internal ventral sclerite widely rectangular; with 3 pairs of long ventral margin setae, and pair of fine, short setae on postero-distal margin. Bursa copulatrix narrowly lozenge-shaped.

Holotype: Japan, Okinawa, Yaeyama Islands: 1 male, Ishigaki-jima, Omoto-dake (24°25'N, 124°11'E, 80 m), 18–19.III.2002, I. Oshima *et al.*, L (CBM-ZI 145412).

Paratypes. 3 males, 3 females, same data as holotype (CBM-ZI 145413–145418).

Other specimens examined. Okinawa, Okinawa Island: 53 females, Kunigami-son, Yona, Sukuna-gawa, lower reach, 21.III.1999, TI & AO, L; 1 male, 3 females, Kunigami-son, Yona, small tributary of Sukuna-gawa, 22.III.1999, TI & AO, L; 1 male, 2 females, Kunigami-son, Yona-gawa, Nakafukuji-hash, 23.XI.2010, TI, P; 3 males, 6 females, Nago-shi, Genka-kawa, Hogen-hash, 22.XI.2010, TI, P. **Okinawa, Yaeyama Islands:** 144 males, 244 females, same data as holotype; 19 females, Iriomote-jima, Nishi-funatsuki-gawa, Nishi-funatsuki-bashi, 23.III.1999, TI & AO, L; 4 males, 50 females, Iriomote-jima, Omija-gawa, Omija-bashi, 24.III.1999, TI & AO, L; 9 males, 18 females, Iriomote-jima, Aira-gawa, 25.III.1999, TI & AO, L; 1 male, Iriomote-jima, Maera-gawa, 13–14.IV.2005, TI, L.

Diagnosis. The male of this species is similar to that of *H. sidong* Oláh, 1989, described from Vietnam (Oláh 1989) and also found in China (Zhou *et al.* 2009), in having the phallic apparatus unique in shape and the lateral process of segment IX triangular, but this species is clearly distinguished from the latter by the broadly rectangular dorsal section of the dorsal plate and short, round inferior appendages.

Etymology. The specific name refers to the name of the islands where this species was collected.

Distribution. Japan (Nansei Islands). Endemic to Nansei Islands.

Habitat. Adults were collected from streams in mountain and lowland areas.

Japanese name. Nansei-hime-tobikera.

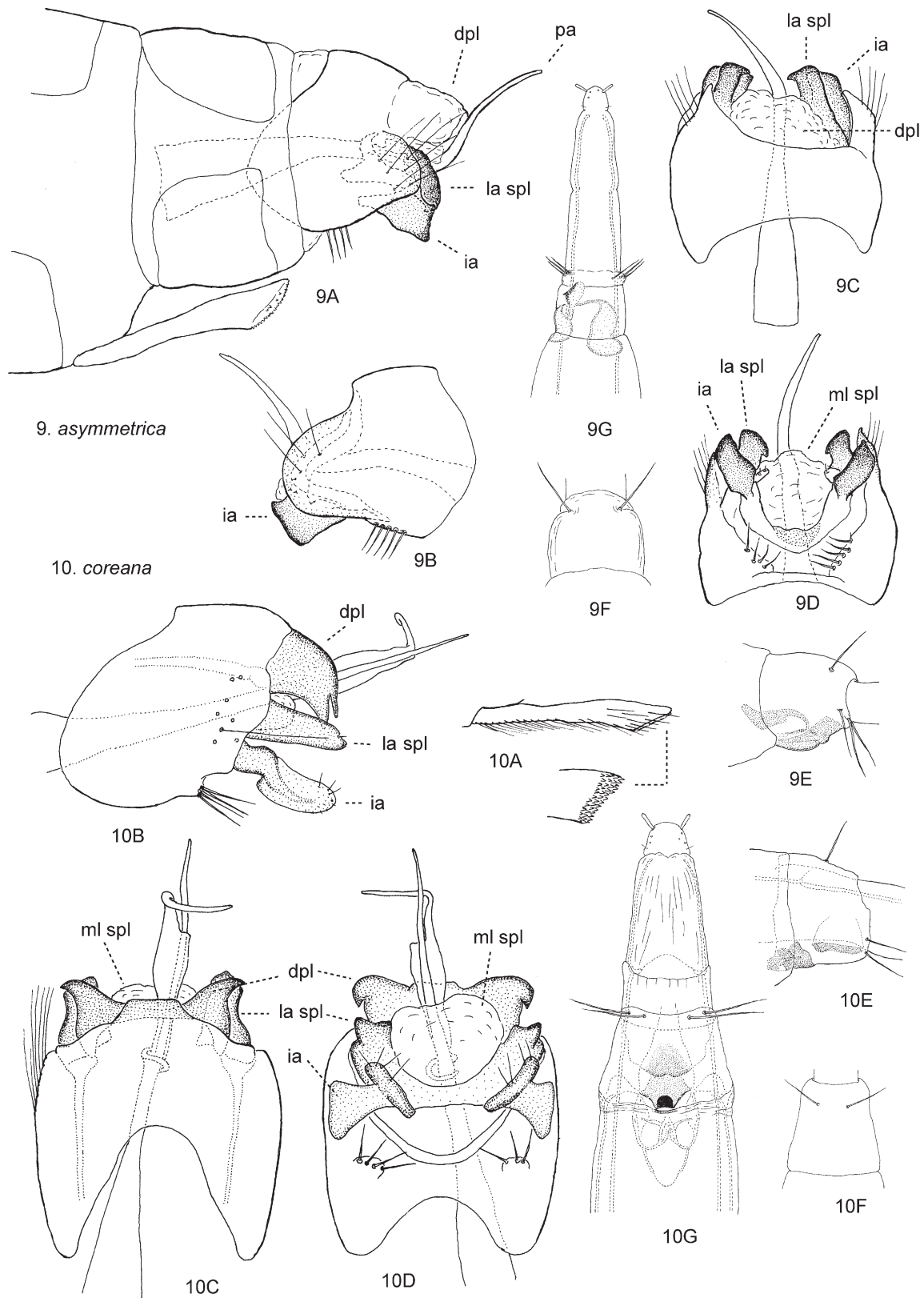
***Hydroptila asymmetrica* Kumanski, 1990**

(Figs. 9, 14E)

Hydroptila asymmetrica Kumanski, 1990, 50–52, figs. 56–63, male, female, Korea; Arefina *et al.*, 2002, 97, Russian Far East (continental parts); Nozaki & Tanida, 2007, 245, Japan (Honshu).

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker marking at apical parts.

Male. Lengths of forewing, hindwing and body 2.3–2.5 mm, 1.9–2.2 mm and 2.1–2.6 mm, respectively (n=7). Antennae 32–35-segmented; length 1.3–1.6 mm (n=7). Ventral process of sternite VII elongate, expanded at distal half, apex with rugose sculpturing. Segment IX with rounded antero-lateral apodemes and unequally developed distal margin, several setae present on each side in most specimens but absent on left side in few specimens. Dorsal plate membranous, roundish in lateral view, in dorsal view irregularly convex. Subgenital plate trilobed, lateral



FIGURES 9–10. **9, *H. asymmetrica*:** A–D, male; A—abdominal segments VII–X, lateral, left; B—abdominal segments IX–X, lateral, right; C—genitalia, dorsal; D—same, ventral; E–G, female; E—abdominal segment VIII, lateral; F—same, dorsal; G—abdominal segments VII–X, ventral. **10, *H. coreana*:** A–D, male; A—ventral process with enlarged apex; B—genitalia, lateral; C—same, dorsal; D—same, ventral; E–G, female; E—abdominal segment VIII, lateral; F—same, dorsal; G—abdominal segments VII–X, ventral. Abbreviations: la spl, lateral arm of subgenital plate; ml, median lobe of subgenital plate; others as in Fig. 1.

arms strongly sclerotized, subquadrate with apices acute, angled ventro-mesad in dorsal and ventral views, fused with membranous median lobe; short digitate process present ventro-mesally at base of each lateral arm. Phallic apparatus almost straight, tapered in basal half, characteristically curved to right in basal 3/5, apical 2/5 slender, apex subacute. Inferior appendages strongly sclerotized, short, subquadrate in lateral and ventral views.

Female. Lengths of forewing, hindwing and body 2.0–2.7 mm, 1.7–2.4 mm and 1.8–3.3 mm, respectively (n=10). Antennae 24–26-segmented; length 0.8–1.0 mm (n=8). Abdominal segments rather pale. Sternite VI with small ventral process. Segment VIII with asymmetrical complicated sac-like structure mesally and 3–4 pairs of apical-margin setae. Segment IX often withdrawn from segment VIII in spirit specimens. Bursa copulatrix-lozenge shaped.

Specimens examined. Hokkaido: 1 male, Kushiro-shi, Akan-cho, Akan-kohan, Churui, 14.IX.1999, TI, L; 1 female, Honbetsu-cho, Benkeido, 21.VII.1980, TI, L; 1 female, Mikasa-shi, Ikushunbetsu, 6.VII.1997, TI & AO; 1 female, Sapporo-shi, Takino, Ashiribetsu-no-taki, 28.VII.1978, TI, S; 3 females, Chitose-shi, Shikotsu-kohan, 28.VIII.1997, TI & AO, L; 11 males, 143 females, Shimamaki-mura, Ori-kawa, 23.VII.2005, NK, L (NK); 4 females, Imakane-cho, Makomanai-gawa, 17.VII.2005, NK (NK); 3 males, 3 females, Shiriuchi-cho, Idesu-gawa, Idesu-bashi, 26.VIII.1997, AO, L; 13 females, *ibid.*, 6.VII.1998, AO, L; 8 males, 18 females, Shiriuchi-cho, Shiriuchi-onsen, 16.VI.1998, HN; 2 males, 4 females, Matsumae-cho, Oyobe-gawa, Gogo-bashi, 12.IX.2006, TI, L. **Honshu. Aomori:** 6 males, 27 females, Higashidori-mura, Noushi-gawa, 12–19 m, 14.IX.2010, L & P, TI; 1 male, Mutsu-shi, Simo-ogawa, Shozu-gawa, 66 m, 17.IX.2010, TI, L. **Iwate:** 2 females, Oshu-shi, Koromogawa-mura, Omori, 200 m, 21.VI.1997, TH, L. **Miyagi:** 4 females, Kawasaki-machi, Taro-gawa, 200 m, 22.VI.1997, TH, L. **Yamagata:** 6 females, Kaneyama-machi, Kanayama-gawa, Arakane-bashi, 11.X.1999, AO, L. **Niigata:** 1 female, Shibata-shi, Uchikawa-gawa, 200 m, 7.VII.1994, TH, L; 1 male, 2 females, Kanose-machi, Koara, 13.VI.1998, M. Maruyama. **Ishikawa:** 1 male, Kanazawa-shi, 4.VII.1998, T. Murakami; 1 male, 10 females, Hakusan-shi, Yoshinotani-mura, Chugu, 9.X.2000, HN. **Shizuoka:** 8 males, 7 females, Shizuoka-shi, Mizumiuro, 27.IX.1995, TH, L; 5 males, 6 females, Shizuoka-shi, Ushizawa, Moriya-sawa, 120 m, 26.VII–27.VIII.1995, TH, L; 7 females, Shizuoka-shi, Umegashima, Rokurogi, 420 m, 26.VII.1995, TH, L; 6 males, 65 females, Shizuoka-shi, Yunoshima, Warashina-gawa, 280 m, 19.VIII–15.X.1995, TH, L; 3 males, 6 females, Shizuoka-shi, Yuyama, Yuyama-gawa, 180 m, 22.IX.1995, TH, L; 13 females, Shizuoka-shi, Hirano, Kurobe-zawa, 400 m, 27.VIII.1995, TH, L; 1 female, Shizuoka-shi, Endo-shinden, Abe-kawa, 70 m, 25.VIII.1995, TH, L; 2 females, Shizuoka-shi, Tawarazawa, Abe-kawa, 130 m, 22.X.1995, TH, L; 1 male, Shizuoka-shi, Yujima, Abe-kawa, 150 m, 19.VIII.1995, TH, L; 1 female, Shizuoka-shi, Nyujima, Abe-kawa, 375 m, 25.IX.1995, TH, L; 4 females, Shizuoka-shi, Shinma, Shinmaya-gawa, 110 m, 14.VI.2005, TH, L; 1 female, Fujieda-shi, Kurata, 4.X.2003, TH, L; 9 males, 47 females, Hamamatsu-shi, Mori-machi, Oguni-jinja, 5.VII–1.VIII.2000, K. Sugisima; 2 females, Hamamatsu-shi, Inasa-cho, Tazawa, 31.VII.2000, K. Sugisima. **Aichi:** 1 male, 1 female, Shinshiro-shi, Horai-cho, 14.VII.1991, HN; 1 female, Shinshiro-shi, Horai-cho, Kansa-gawa, 15.VII.1999, HN. **Mie:** 1 female, Kisei-cho, 30.V.1991, H. Morita. **Shiga:** 6 males, 26 females, Higashi-omi-shi, Eigenji-cho, Kanzaki-gawa, 400 m, 5.IX.1998, TH, L; 4 males, 1 female, Koka-shi, Tsuchiyama, Minami-tsuchiyama, 15.IX.2008, NKA, L (MKNM). **Hyogo:** 15 females, Asago-shi, Ikuno-cho, Ikuno-damu, 23.VII.1997, T. Murakami; 1 female, Asago-shi, Wadayama, Ishibe-jinja, 3.XI.2006, K. Inazu & TI, L; 4 males, Kamigori-cho, Takayama, Amuro-gawa, 27–28.VII.2000, T. Murakami; 7 females, Yabu-shi, Oya-cho, Akenobu-gawa, 400 m, 23.IX.2003, TH, L; 2 females, Tanabe-shi, Kasuga-cho, Sonobe, Nantan-damu, 22.VIII.2000, S. Tsukaguchi. **Wakayama:** 1 female, Kozagawa-shi, Hirai, 12–17.VII.1999, M. Maruyama. **Tottori:** 1 female, Nichinan-cho, Yukawa, Wakamatsu-gawa, 580 m, 14.IX.2002, TH, L. **Shimane:** 1 male, 1 female, Tsuwano-cho, Deiri, 8.X.2001, HN. **Hiroshima:** 1 male, Shobara-shi, Kawanishi-cho, 27.IX.2001, S. Nakamura; 1 male, Yoshiwa-mura, Nakatsuya-gawa, 720 m, 15.IX.2002, TH, L. **Shikoku. Tokushima:** 1 female, Anan-shi, Naga-gawa, 11–13.X.1998, S. Tsukaguchi; 1 male, Tsurugi-cho, Ichu-son, Kuwadaira, Nazawadani, 880 m, 25.IX.2002, TH. **Ehime:** 1 male, 1 female, Kumakogen-cho, Omogo-mura, Kanmon, 23.V.1999, TI & AO, S; 6 males, 5 females, Kumakogen-cho, Omogo-mura, Teppoishi-gawa, camp site, 22.V.1999, TI & AO, S; 4 males, Ozu-shi, Hijikawa, Shimasaka-damu, 7–9.VIII.2000, S. Tsukaguchi. **Kochi:** 1 male, 4 females, Nahari-cho, 30.VII.1996, S. Tsukaguchi. **Kyushu. Fukuoka:** 1 male, 4 females, Hisayama-machi, Ino, Todoroki-gawa, Todoroki-bashi, 21.IX.2000, AO, L. **Nagasaki:** 10 females, Oseto, Gotsu-gawa, Iwaseto-bashi, 7.VI.2001, T. Fujitani, L; 2 males, 1 female, Omura-shi, Kori-gawa, 17.IX.2002, TH, L. **Nagasaki, Tsushima Islands:** 185 males, 327 females, Tsushima-shi, Kamiagata-cho, Sago, 15 km south of Kounoki-yama, 22–23.VII.2009, RBK, L (RBK); 4 males, 7 females, Tsushima-shi, Izuhara-cho, Azamo, near estuary, 19.VII.2009, RBK, L (RBK); 1 female, Tsushi-

ma-shi, Izuhara-cho, Azamo, mountain stream, 17.VII.2009, RBK, L (RBK). **Kumamoto:** 1 male, Minami-asomura, Hakusui, Nakamatsu, Aso Tanibito Museum, IX.2002, AO. **Miyazaki:** 2 females, Aya-cho, Honji-gawa, 170 m, 20.IX.2002, TH, L. **Kagoshima, Amami Islands:** 4 males, 2 females, Tatsugo-cho, Toguchi-gawa, 27.III.1998, HN, L; 2 males, 6 females, *ibid.*, 18.III.1999, TI & AO, L; 2 females, Amami-shi, Sumiyo-son, Niimura, 19.III.1999, TI & AO; 21 males, 54 females, Uken-son, Ogachi-gawa, Takinoshita, 19.III.1999, TI & AO, L; 5 males, 25 females, Uken-son, Kawauchi-gawa, 50 m, 26.III.2007, TI, L; 3 males, Uken-son, Yakusho-gawa, middle reach, 5.V.2008, TI, P. **Okinawa, Okinawa Island:** 17 males, 106 females, Kunigami-son, Yona, Sukunagawa, 21.III.1999, TI & AO, L; 2 females, Kunigami-son, Yona-gawa, Nakafukuji-hashii, 23.XI.2010, TI, P. **Okinawa, Yaeyama Islands:** 21 males, 17 females, Ishigaki-jima, Omoto-dake, 18–19.III.2002, I. Oshima *et al.*, L.

Remarks. This species is broadly distributed on the main Japanese islands and also occurs on the southwestern islands (Nansei Islands). This distribution pattern is unique for Japan, since the caddisfly faunas of the main islands and southwestern islands are usually quite different from each other (Tanida 1997). The males of this species can be separated from Japanese congeners by the asymmetrical segment IX, and strongly sclerotized quadrate inferior appendages and lateral arms of the subgenital plate. The female of this species is distinguishable from other Japanese congeners by the asymmetrical internal genital structures.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu, Tsushima Islands, Nansei Islands), Korea, Russian Far East (continental parts).

Habitat. Adults were collected from streams in mountain and lowland areas.

Japanese name. Migi-hime-tobikera.

Hydroptila coreana Kumanski, 1990

(Figs. 10, 14E)

Hydroptila coreana Kumanski, 1990, 52–54, figs. 72–79, male, female, Korea; Arefina *et al.*, 2002, 98, Russian Far East (continental parts); Mey & Nozaki, 2006, 24, Japan (Honshu).

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker marking at apical parts.

Male. Lengths of forewing, hindwing and body 2.6–2.8 mm, 2.3–2.5 mm and 1.3–1.5 mm, respectively (n=5). Antennae 32–35-segmented and 1.3–1.5 mm long (n=5). Ventral process of sternite VII long with expanded, rugosely sculpted apex. Segment IX with rounded apico-lateral apodemes, pair of small setal processes mid-laterally on sternite. Dorsal plate sclerotized, in lateral view short stout structure, divided and directed ventrad apically; in dorsal view tripartite, short wide rectangle medially between paired short stout beak-like processes. Subgenital plate trilobed, lateral arms well sclerotized, apically truncate in dorsal and ventral views, in lateral view lateral arms rectangular with rounded apices, fused with membranous median lobe. Phallic apparatus slender and elongate, with curled subapical process and short titillator. Inferior appendages in ventral view plate-like with expanded apices; apices ellipsoidal in lateral view.

Female. Lengths of forewing, hindwing and body 2.5–3.0 mm, 2.0–2.7 mm and 2.6–3.5 mm, respectively (n=5). Antennae 25–27-segmented; length 0.9–1.0 mm (n=5). Sternite of segment VIII small lozenge-shaped, in ventral view a small median dark semi-circular area on anterior margin; internal sclerite lozenge-shaped in ventral view, rectangular in lateral view; 2 pairs of apical-marginal setae ventrally and 1 pair dorsally. Bursa copulatrix slender, lozenge-shaped.

Specimens examined. **Hokkaido:** 2 males, females, Shibeche-cho, Kayanuma, Shirarutoro-etoro-gawa, Tomibashi, 16.VII.2009, TI, L; 222 females, Shibeche-cho, Kayanuma, Shirarutoro-etoro-gawa, 17 m, 16.VII.2009, TI, P; 1 male, 2 females, Kushiro-shi, Akan-kohan, Ibeshibetsu, 9.VIII.2007, TI, L; 1 male, 4 females, Eniwa-shi, Eniwa-ohashi, 14.VII.2001, TI & AO, L; 1 female, *ibid.*, 9–15.VII.2005, TI, L; 1 female, Eniwa-shi, Rarumanai-gawa, Hakusen-no-taki, 15–21.VII.2001, TI *et al.*, L; 1 female, Chitose-shi, Monbetsu-gawa, 240 m, 14.VII.2000, TI *et al.*, L; 14 males, 31 females, Imakane-cho, Pirika-sukii-jo, 27.VII.2004, TI, L; 2 females, *ibid.*, 14.X.2006, TI, L; 15 males, 50 females, Imakane-cho, Kami-suzunohara, Makomanai-gawa, 17.VII.2005, NK, L (NK); 1 male, 2 females, Oshamanbe-cho, Toyotsu-horonai-gawa, 30.VI.2007, NK (NK). **Honshu. Iwate:** 4 males, 3 females, Oshu-shi, Koromogawa-mura, Omori, 200 m, 21.VI.1997, TH, L. **Miyagi:** 5 males, 12 females, Kawasaki-machi, Taro-gawa, 200 m, 22.VI.1997, TH, L. **Akita:** 1 male, 4 females, Gojome-machi, Jabami, 12.IX.2003, TH, L.

Yamagata: 8 females, Kaneyama-machi, Kanayama-gawa, Arakane-bashi, 11.X.1997, AO, S. **Gifu:** 1 female, Takayama-shi, Hikagedaira, 20.IX.1998, HN. **Aichi:** 1 female, Toyota-shi, Kashio-gawa, 26.IX.1999, Tanaka; 3 males, 5 females, Toyota-shi, Kujudaira-cho, Tomoe-gawa, 30.V.2000, HN & H. Morita; 1 male, 3 females, Toyota-shi, Fuso-cho, Yahagi-gawa, 23.V.2000, HN; 1 male, 1 female, Shinshiro-shi, Horai-cho, Kansa-gawa, 15.VII.1999, HN; 1 female, Asahi-cho, Oda, 9–10.VII.1999, K. Sugisima. **Shiga:** 3 females, Higashi-omi-shi, Eigenji-cho, Kanzai-gawa, 400 m, 5.IX.1998, TH, L; 2 males, Koka-shi, Minakuchi, Nasaka, Imai-ke, Daichiji, 4.VII.2009, NKA, L (MKNM); 3 males, 8 females, Koka-shi, Tsuchiyama, Minami-tsuchiyama, 15.IX.2008, NKA, L (MKNM). **Kyoto:** 5 males, 5 females, Kasagi-cho, Kizu-gawa, 2.IX.1997, K. Tojo. **Hyogo:** 2 males, 7 females, Asago-shi, Ikuno-cho, Ikuno-damu, 23.VII.1997, T. Murakami; 23 females, Oya-cho, Akenobu-gawa, 400 m, 23.IX.2003, TH, L. **Nara:** 1 male, 1 female, Yamazoe-mura, Hirose, Nabari-gawa, 28.VIII.1997, K. Tojo. **Tottori:** 3 males, 11 females, Nichinan-cho, Yukawa, Wakamatsu-gawa, 580 m, 14.IX.2002, TH, L. **Shimane:** 1 male, 2 females, Ota-shi, Sanbe, Ukinuno-no-ike, 5.VIII.2001, AO, L; 8 males, 138 females, Tsuwano-cho, Deiri, 8.X.2001, HN. **Okayama:** 2 males, 3 females, Tsuyama-shi, Kagamino-cho, Terawada, Kagami-gawa, 7.VIII.2001, HN & AO. **Hiroshima:** 4 males, 1 female, Kozan-cho, Kasa-kyo, Hattabara-damu, 1.X.1998, S. Nakamura; 1 male, Hiroshima-shi, Yagi, Ota-gawa, 1.X.1998, S. Nakamura; 1 female, Togochi-machi, Sandankyo, 31.V.1999, HN; 1 male, 10 females, Yoshiwa-mura, Nakatsuya-gawa, 720 m, 15.IX.2002, TH, L. **Yamaguchi:** 17 males, 161 females, Mine-shi, Shuho-cho, Kama, Koto-gawa, 7.X.2001, HN. **Shikoku. Tokushima:** 9 males, 1 female, Anan-shi, Naka-gawa, 11–13.X.1998, S. Tsukaguchi. **Ehime:** 1 male, 1 female, Ozu-shi, Hijikawa-cho, Shimasaka-damu, 7–9.VIII.2000, S. Tsukaguchi. **Kochi:** 6 males, 5 females, Kami-shi, Tosayamada-cho, Sano, 5.X.2000, HN; 15 males, 26 females, Motoyama-machi, Yoshino-gawa, 250 m, 24.IX.2002, TH, L. **Kyushu. Oita:** 18 males, 77 females, Nakatsu-shi, Yabakei-machi, Miyazono, Yamaguchi-gawa, 17.IV.2004, TH, L. **Miyazaki:** 5 males, 11 females, Aya-cho, Honji-gawa, 170 m, 20.IX.2002, TH, L; 6 females, Aya-cho, Honji-gawa, 40 m, 21.IV.2004, TH, L.

Remarks. The male of this species is rather similar to that of *H. asymmetrica* in having the lateral arms of the subgenital plate as well as the inferior appendage well sclerotized, but most parts of the male and female genitalia of this species are symmetrical. The female of this species is quite similar to that of *H. spinosa*, but *H. coreana* can be distinguished from *H. spinosa* by the sclerotized internal sclerite.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu), Korea, Russian Far East (continental parts).

Habitat. Adults were collected from mountain and lowland streams.

Japanese name. Chosen-hime-tobikera.

Hydroptila kakidaensis Nozaki & Tanida, 2007

(Figs. 11, 14F)

Hydroptila kakidaensis Nozaki & Tanida, 2007, 245–246, figs. 2–3, male, female, Japan (Honshu).

Adult. Wings dark brown with several small lighter markings. Antennae brown to light brown with darker markings towards apices.

Male. Lengths of forewing, hindwing and body 2.4–2.9 mm, 2.2–2.5 mm and 2.4–3.0 mm, respectively (n=5). Antennae 30–32-segmented; length 1.4–1.7 mm (n=5). Ventral process of sternite VII elongate broad at apex, ventral surface slightly rugose apically. Segment IX with large rounded apico-lateral apodemes and subtriangular setose lobes at postero-lateral angles. Dorsal plate triangular with apex subacute in lateral view, in dorsal and ventral views elongate ovoid, shape of apex variable even within specimens collected from same site, with or without shallow median concavity. Subgenital plate membranous, wide in lateral and ventral views, length variable, between 1/4–1/2 as long as dorsal plate. Phallic apparatus slender with long narrow flanges; subapical process almost straight, elongate, slightly curved apically. Inferior appendages short, fused basally, each distally forming 2 lobes; in lateral view dorsal lobe thumb-like, bearing very long seta near apex; mesal lobe larger than dorsal lobe, directed postero-ventrad, apex acute.

Female. Lengths of forewing, hindwing and body 2.8–3.2 mm, 2.6–2.9 mm and 2.4–3.3 mm, respectively (n=5). Antennae 24–25-segmented; length 0.8–1.0 mm (n=5). Segment VIII tergite weakly sclerotized with wide shallow excision posteriorly and 5 pairs of setae near posterior-lateral angles; sternite weakly sclerotized with nar-

row oblique bands at posterior margin; pair of rounded lobes ventrally, each lobe with 2–3 (2 in most specimens) strong, somewhat wavy, setae. Bursa copulatrix lozenge-shaped.

Specimens examined. **Honshu. Nagano:** 5 males, 1 female, Hotaka-cho, Azumino, 29.V.1999, HN. **Shizuoka:** 6 males, 3 females, Shimizu-cho, Kakida-gawa (type locality), 27.V.2001, TN & KT, L; 1 male, *ibid.*, 27.IV–11.V.2002, TN, M; 1 female, Shizuoka-shi, Shimo, Kujiraga-ike, 22.X.1995, TH, L; 1 female, Shizuoka-shi, Mizumiiro, 150 m, 27.IX.1995, TH, L; 8 males, 5 females, Shizuoka-shi, Ushizawa, Moriya-sawa, 120 m, 26.VII.1995, TH, L; 1 male, 2 females, Shizuoka-shi, Shinma, Shinmaya-gawa, 110 m, 14.VI.2005, TH, L; 19 males, 19 females, 7 pupae, 7 larvae, Shizuoka-shi, Shinma, Shinmaya-gawa, 50 m, 21.VI.2009, TH, L; 3 males, 1 female, Shizuoka-shi, Enodoshinden, Abe-kawa, 70 m, 25.VIII.1995, TH, L; 33 males, 10 females, Shizuoka-shi, Tawarazawa, Abe-kawa, 130 m, 22.X.1995, TH, L; 88 males, 84 females, Shizuoka-shi, Tawarazawa, Abe-kawa, 150 m, 23.V.1994, TH, L; 4 females, Shizuoka-shi, Yujima, Abe-kawa, 150 m, 19.VIII.1995, TH, L; 2 females, Shizuoka-shi, Nyujima, Abe-kawa, 375 m, 25.IX.1995, TH, L; 54 males, 15 females, Shizuoka-shi, Ashikubo, Abe-kawa, 75 m, Matsuzaki-hashii, 1.VI–25.VII.2005, TH, L; 1 male, Hamamatsu-shi, Mori-machi, Oguni-jinja, 1.VIII.2005, K. Sugisima. **Mie:** 7 males, Yokkaichi-shi, Watarai-cho, Miyakawa, 28.V.2001, H. Morita. **Kyushu. Kumamoto:** 3 males, Takamori-cho, Kigo-no-taki, 3.VI.1999, HN; 1 male, Minami-aso-mura, Hakusui, Nakamatsuike-no-kawa, headwater, 4.VI.2002, AO, S; 6 males, 1 female, Minami-aso-mura, Hakusui, Myojin-ike, Meisui-koen, 19.XI.2001, AO, S; 4 males, 1 female, Minami-aso-mura, Hakusui, Yoshida-jo, 19.XI.2001, AO, S. **Miyazaki:** 8 males, 1 female, Aya-cho, Yotsue, Honjo-gawa, 21.V.2004, TH, L; 21 males, 20 females, Nobeoka-shi, Kitagawa-cho, 22.IV.2004, TH, L. **Kagoshima:** 1 male, 1 female, between Izumi-shi to Akune-shi, 11.V.1999, S. Tsukaguchi.

Remarks. The male of this species is similar to that of *H. dejaloni* Botosaneanu, 1980, which occurs in Europe (Malicky 2004a), in having rounded apico-lateral apodemes on segment IX, the dorsal plate subtriangular, the subgenital plate membranous and stout, and the inferior appendages short with 2 lobes. It is distinguishable from that of *H. dejaloni* by the shape of the phallic apparatus with its almost straight, elongate subapical process.

Distribution. Japan (Honshu, Kyushu). Endemic to Japan.

Habitat. Adults of this species are collected near streams.

Japanese name. Kakida-hime-tobikera.

***Hydroptila botosaneanui* Kumanski, 1990**

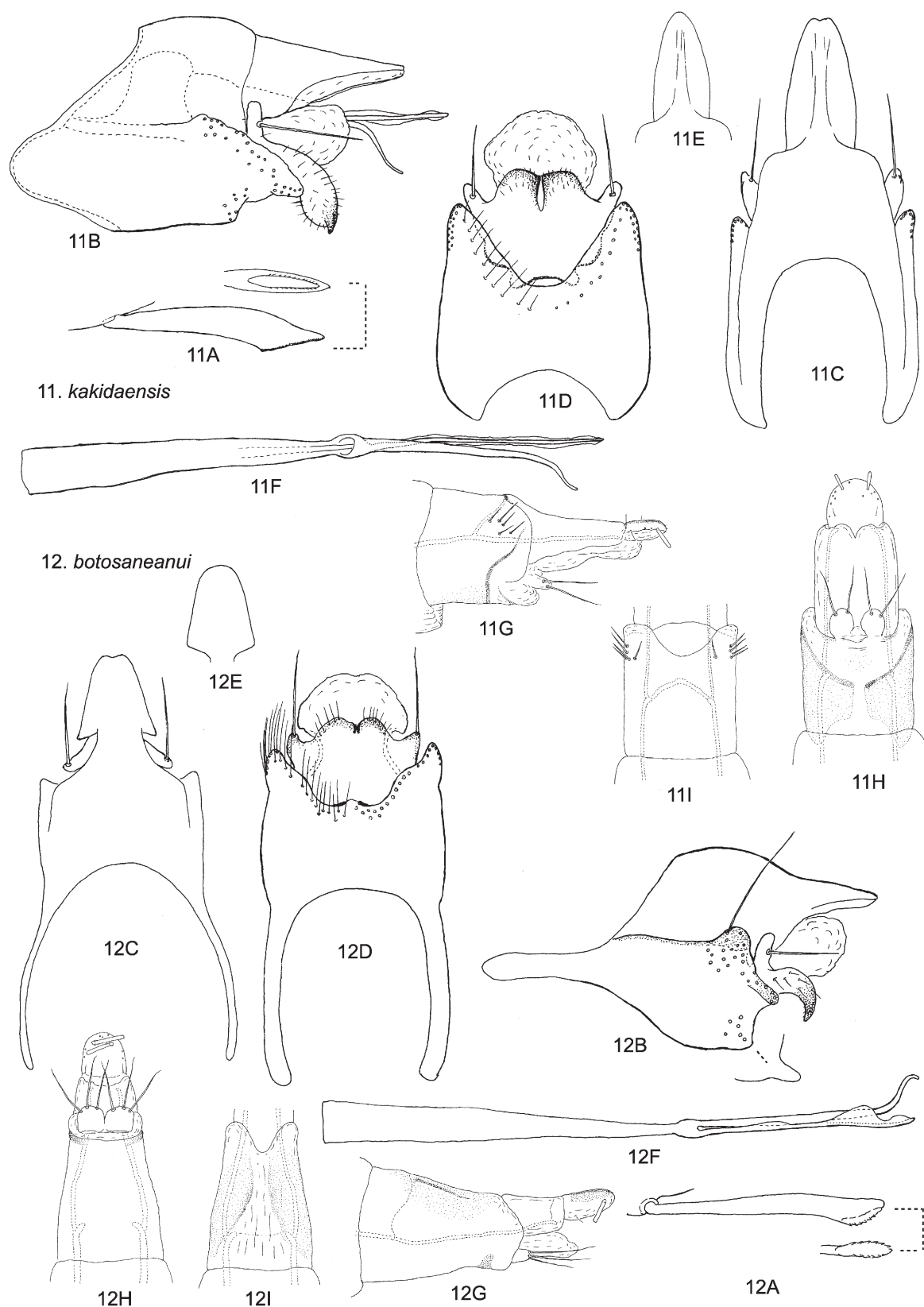
(Figs. 12, 14F)

Hydroptila botosaneanui Kumanski, 1990, 48–49, figs 51–55, male, female, Korea; Arefina *et al.*, 2002, 97, Russian Far East (continental parts).

Adult. Wings dark brown with several indistinct small lighter markings. Antennae brown to light brown with indistinct darker markings towards apices.

Male. Lengths of forewing, hindwing and body 2.6–2.9 mm, 2.3–2.4 mm and 2.5–2.7 mm, respectively (n=5). Antennae 29–32-segmented; length 1.3–1.4 mm (n=5). Ventral process of sternite VII long with broad serrated apex. Segment IX with apico-lateral apodemes elongate and lateral lobes setose; apico-lateral apodemes extended to segment VII; setal lobes forming short humps in many specimens but produced in some specimens. Dorsal plate semi-membranous, transparent, triangular in lateral view, shovel-shaped in dorsal view; apex variable in shape even within specimens collected from same site, with or without shallow median concavity. Subgenital plate membranous, rounded in ventral and lateral views. Phallic apparatus slender, elongate with 3 small flanges; subapical process almost straight and adpressed to phallic apparatus, twisted apically. Inferior appendages short, fused basally and distally forming 2 short lobes; in lateral view, dorsal lobe digitate with very long seta subapically, ventral lobe larger and darker than dorsal lobe, curved ventrad, apically acute.

Female. Lengths of forewing, hindwing and body 2.5–2.8 mm, 2.0–2.4 mm and 2.6–3.3 mm, respectively (n=5). Antennae 24–25-segmented; length 0.9–1.0 mm (n=5). Segment VIII tergite weakly sclerotized with deep excision posteriorly; sternite indistinct with narrow transverse bands near apical margin; pair of small rounded lobes ventrally, each lobe with 2–3 (3 in most specimens) strong, somewhat wavy, setae. Bursa copulatrix lozenge-shaped.



FIGURES 11–12. 11, *H. kakidaensis*: A–F, male; A—ventral process, lateral and ventral (only apex); B—genitalia, lateral; C—same, dorsal; D—same, ventral; E—dorsal plate, variation, dorsal; F—phallic apparatus, lateral; G–I, female; G—abdominal segments, VIII–X, lateral; H—same, ventral; I—segment VIII, dorsal. 12, *H. botosaneanui*: A–F, male; A—ventral process, lateral and ventral (only apex); B—genitalia, lateral; C—same, dorsal; D—same, ventral; E—dorsal plate, variation, dorsal; F—phallic apparatus, lateral; G–I, female; G—abdominal segments, VIII–X, lateral; H—same, ventral; I—segment VIII, dorsal.

Specimens examined. **Hokkaido:** 2 males, 47 females, 3 larvae, Kushiro-shi, Akan-cho, Akan-panke-to, 30.VI–21.IX.1996, TI & AO, L, S & R; 2 males, 17 females, *ibid.*, 14.VII–13.VIII.1997, TI & AO, L & S; 51 males, 88 females, 132 pupae, 15 prepupae, 11 larvae, *ibid.*, 10.VII–22.VIII.1998, TI & AO, L & R; 1 male, 29 females, *ibid.*, 26.VII–14.IX.1999, TI & AO, L; 2 females, *ibid.*, 8.VIII.2007, TI, S; 1 male, 3 females, *ibid.*, 1.X.2010, TI, S; 1 female, Kushiro-shi, Akan-cho, Ibeshibetsu-gawa, 425 m, 27.VII.1999, TI & AO, L; 12 females, Kushiro-shi, Akan-cho, Akan-kohan, Ibeshibetsu, 31.VIII–21.IX.1996, TI & AO, L; 1 male, *ibid.*, 14.VII.1997, TI & AO, L; 3 males, 23 females, Kushiro-shi, Akan-cho, Akan-kohan, Churui, 14.IX.1999, TI, L; 6 males, 224 females, Eniwa-shi, Kashiwagi-gawa, Fukajo-bashi, 21.VI–12.IX.2000, TI & AO, L; 3 males, 67 females, *ibid.*, 25–30.VI.2001, TI, L; 1 female, Eniwa-shi, Moizari-gawa, Onsui-tameike, 6.VI.2000, TI & AO, L; 1 female, Eniwa-shi, Moizari-gawa, Saiwai-bashi, 20.VII.2010, TI, L; 2 males, 2 females, Eniwa-shi, Rarumanai-gawa, Hakusen-no-taki, 19.VI.2000, TI & AO, L; 10 males, 8 females, *ibid.*, 15–21.VII.2001, TI, L; 1 female, Eniwa-shi, Izari-gawa, Suisei-bashi, 17.VIII.2001, TI, L; 3 females, *ibid.*, 2.VII.2002, TI, L; 2 males, 4 females, Eniwa-shi, Ichankoppe-zawa, 220 m, 19.VII.2010, TI, L; 1 female, Chitose-shi, Monbetsu-gawa, 240 m, 14.VII.2000, TI *et al.*, L. **Honshu.** **Miyagi:** 1 female, Kawasaki-machi, Taro-gawa, 200 m, 22.VI.1997, TH, L. **Yamagata:** 3 males, 4 females, Kaneyama-machi, Kanayama-gawa, Arakane-bashi, 14.X.1999, AO, S. **Yamanashi:** 1 male, Minobu-cho, Aimata, 9.IX.1994, TH, L. **Gifu:** 3 females, Hikage-daira, 20.IX.1998, HN. **Shizuoka, Shizuoka-shi:** 6 males, 14 females, Ushizuma, Moriyama-sawa, 120 m, 26.VII–27.VIII.1995, TH, L; 4 males, 7 females, Umegashima, Rokurogi, 420 m, 26.VII.1995, TH, L; 3 females, Yunoshima, Warashina-gawa, 280 m, 15.X.1995, TH, L; 8 females, *ibid.*, 19.VIII.1997, TH, L; 2 males, 2 females, Yuyama, Yuyama-gawa, 180 m, 22.X.1995, TH, L; 1 male, Nyujima, Abe-kawa, 375 m, 21.VIII.1994, TH, L; 28 females, Tawarazawa, Abe-kawa, 130–150 m, 22.X.1995, TH, L; 10 females, *ibid.*, 23.V.1994, TH, L; 4 males, 17 females, Yujima, Abe-kawa, 150 m, 19.VIII.1995, TH, L; 54 females, Nyujima, Abe-kawa, 375 m, 25.IX.1995, TH, L. **Shiga:** 1 male, Higashi-omi-shi, Eigenji-cho, Kanzai-gawa, 400 m, 5.IX.1998, TH, L; 1 male, Koka-shi, Tsuchiyama, Okawara, 11.I.2005, NKA, L (MKNM). **Nara:** 1 female, Higashi-yoshino-mura, Takami-gawa, 15.VI.1996, TN. **Hyogo:** 2 females, Asago-shi, Ikuno-damu, 23.VII.1997, T. Murakami; 4 males, 18 females, Asago-shi, Wadayama, Miya, Ishibe-jinja, 3.XI.2006, K. Inazu & TI, L. **Hiroshima:** 1 male, Kita-hiroshima-cho, Geihoku, Yahata-shitsugen, 23.IX.1997, HN.

Remarks. The male of this species is similar to those of *H. moselyi* Ulmer, 1932, distributed in the Asian Far East (Kumanski 1990), and *H. giudicellorum* Botosaneanu, 1980, known from Europe (Malicky 2004a). All have long apico-lateral apodemes, the dorsal plate subtriangular, the subgenital plate membranous and broad, and the inferior appendages short with 2 lobes. *Hydroptila botosaneanui* is distinguished from the latter by its phallic apparatus with the subapical process almost straight and elongate with the apex curved. The female of this species is discriminated from that of *H. kakidaensis*, a related species in Japan, by lack of setae on the dorso-lateral margins of segment VIII.

Distribution. Japan (Hokkaido, Honshu), Korea, Russian Far East (continental parts). Newly recorded for Japan.

Habitat. Adults were collected in mountain lakes and streams.

Japanese name. Kyunaga-hime-tobikera (newly given here).

Species wrongly assigned to the genus *Hydroptila*

Psychomyia sp., Psychomyiidae

(Fig. 13)

Hydroptila usuguronis Matsumura, 1931, 1136, female, Japan (Hokkaido, Honshu). **Reassignment.**

A small female caddisfly (body length 3.2 mm, forewing length 3.0 mm) was deposited in the collections of the Systematic Entomology, Faculty of Agriculture, Hokkaido University (Sapporo), accompanied by 2 labels: (1) A red label bearing words “Type Matsumura,” and (2) a white label in S. Matsumura’s handwriting with the name “*Hydroptilus sapporonis*.” The pinned female was in a small box with another label in the same hand-writing, bearing the following: “*Hydroptila sapporensis usuiironis* Mats.” Since Matsumura described only 1 hydroptilid caddisfly species and this is the only small type specimen with his red label in the caddisfly collections, we deduce that

the female is the type specimen of *Hydroptila usuguronis* Matsumura, 1931. Although the species name on the labels does not coincide with the name published by Matsumura (1931), we infer based on the labels that he changed his mind, giving the name as *sapporonis*, followed by *sapporensis*, to *usuironis*, and finally to *usuguronis*.

Observations on the female clearly show that this is not referable to *Hydroptila* Dalman but corresponds with *Psychomyia* Latreille, Psychomyiidae, on the basis that (1) the terminal segment of each maxillary palp is different in structure from preceding segments, has numerous transverse annulations, and is greater than twice as long as the penultimate segment; (2) the 2 mesoscutal setose warts are small, ovoid; (3) the foretibiae each lack a preapical spur; (4) the basal segment of each tarsus is longer than twice the length of apical spur; and (5) a characteristic bulge is present at about 1/3 length of the anterior margin of the hind wing.

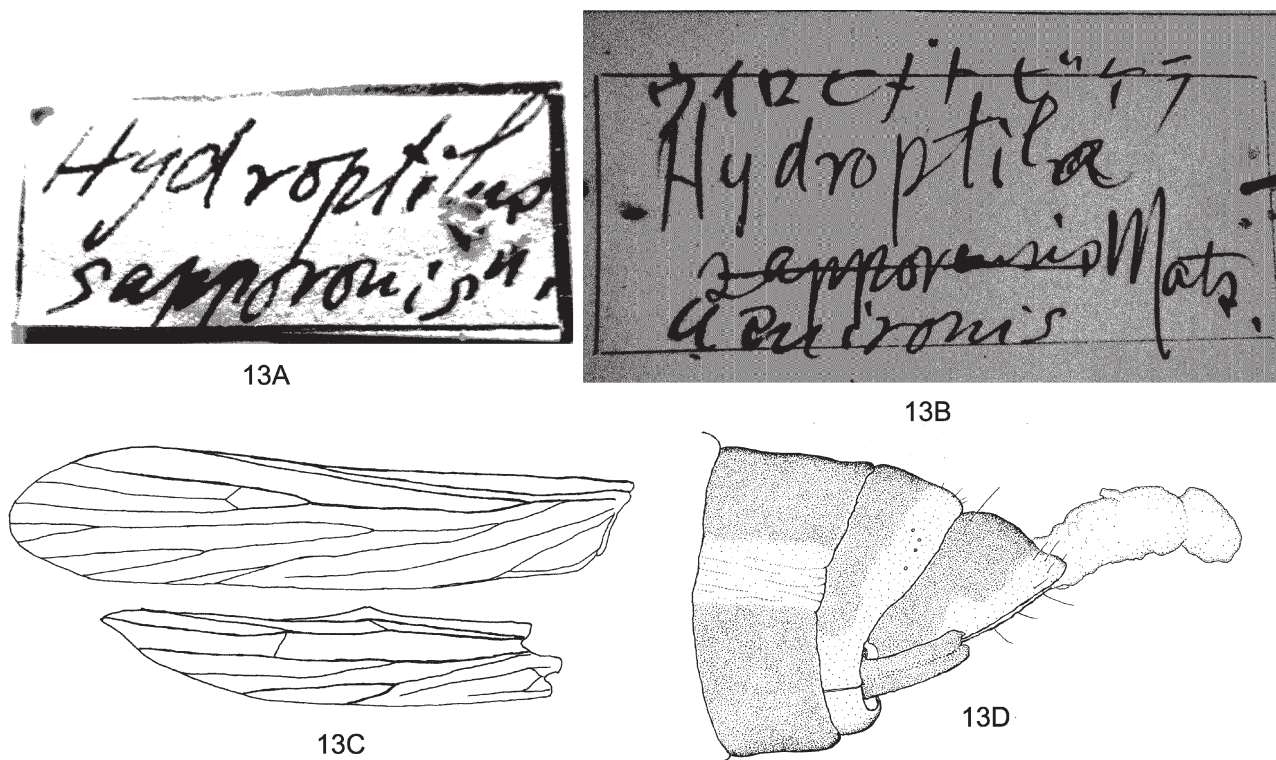


FIGURE 13. Female of *Psychomyia* sp. (Psychomyiidae). Type specimen of *H. usuguronis* Matsumura, 1931. A—label pinned together with the specimen; B—label put on the specimen box; C—wings; D—abdominal segments VII–X, ventro-lateral.

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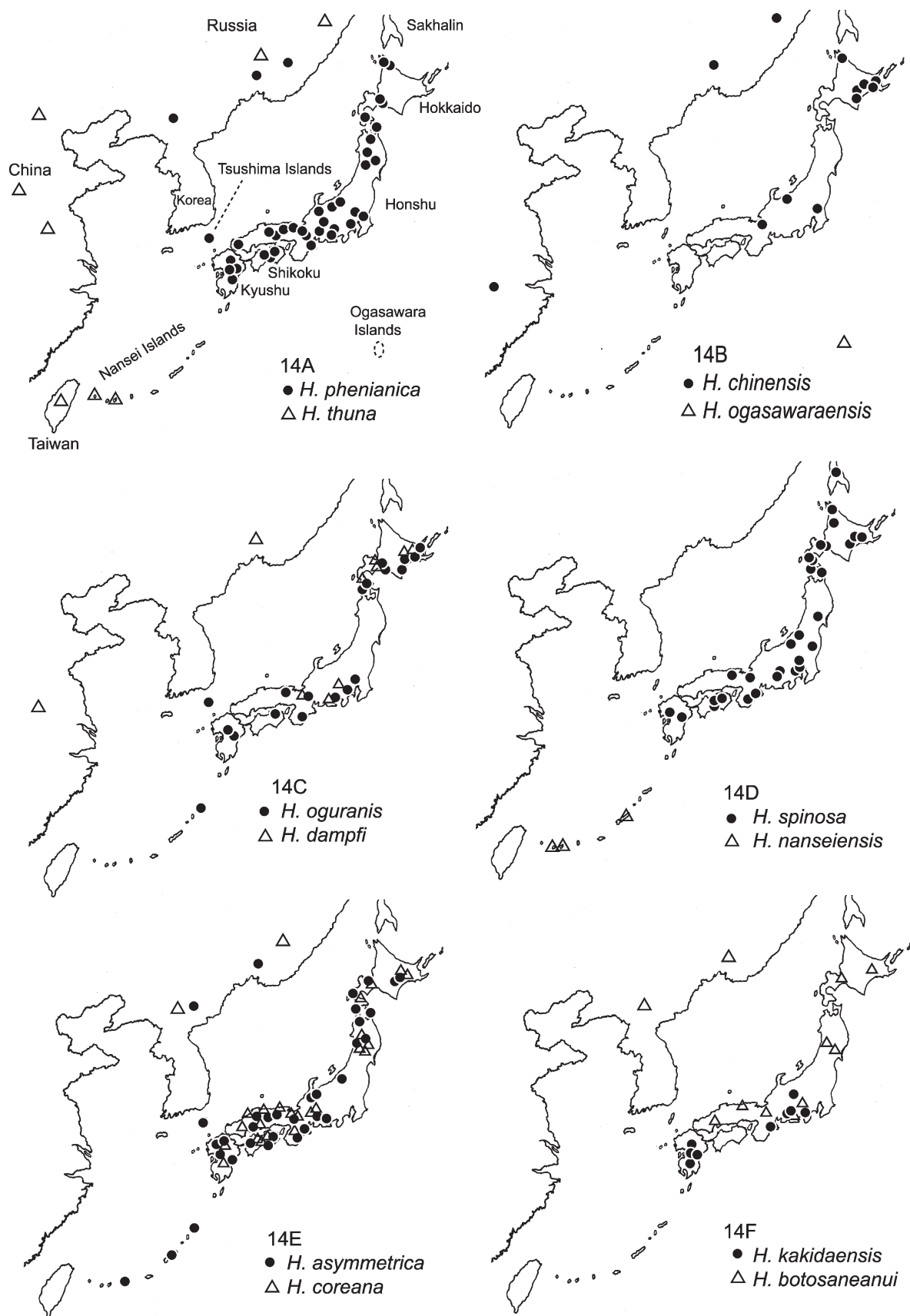


FIGURE 14. Distributions of 12 species of *Hydroptila* in Japan and adjacent areas. For clarity, nearby collection sites in Japan are grouped together as a single point and the sites are roughly plotted in adjacent, non-Japanese areas.

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